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HOW TO DETERMINE THE ADMIXTURE OF ORGANIC OR INORGANIC SUBSTANCES IN RYE AND WHEAT FLOUR.

(Prize essay of the German Millers' Association by Dr. L. Wittmack, Professor of the Agricultural College at Berlin.)

Translated by THE MILLING WORLD.

VIII.

i. Detection in flour of leguminous plants between rye or wheat flour.

THE detection is easy by means of a microscope. The starch grains of peas or beans are single and kidney shaped or oval, with distinct layers. In the interior they have a wide fissure, which under the microscope, generally appears black, and from which numerous small cracks radiate towards the margin. The starch grains are imbedded in a nitrogenous substance, which has been designated in the earlier part of this essay as *Legumin*. Such flour often contains whole continuous cells, filled with legumin and starch. These cells are distinguishable by their smaller size and stouter membrane, which is specially thickened at the corners of the cell, and by the triangular inter-cellular spaces between them. The inter-cellular spaces contain air and appear black under the microscope. An impure sample of this kind, on the addition of iodine, gives a larger quantity of yellow-colored substances than pure flour under the same treatment, for the leguminous fruits contain about 24 per cent. of albuminoid substances, while rye and wheat hold only between 11 and 13 per cent. We are hardly able to classify the leguminous plants by the appearance of their starch grains, for they resemble each other very closely. Those of beans are thickest and most egg-shaped; of peas are more elongated or elliptical; of lintals more kidney-shaped; of vetches very irregular. The size of the starch grain varies considerable; generally the diameter is between 20 and 40 mkm.; sometimes more, but seldom above 56 mkm. in the vetches, and seldom above 70 in the other kinds. The epidermis is characteristic of all leguminous plants. The external outer layer is made up of very delicate, and long staff-shaped cells, placed so as to radiate towards the surface and ensuring great strength to the outer skin. Beneath this we find a thin layer, formed of cylindrical cells, often containing minute crystals; these latter do not form a continuous covering, but often have large open spaces between them. Such pecul arities can best be seen in a cross-section after boiling with caustic potash. A specialist is able to determine the plants from these cross sections, but an enumeration of the differences cannot find any useful application in this connection.

With our present improved grain cleaning machinery the quantity of vetches found among the grain is small, and the detection of a few of its starch grains does not entitle us to the assumption of an intentional adulteration.

The temperature of hydration can also be used to detect any admixture of pea or bean flour, for their starch grains require a higher temperature for their expansion. If we proceed with the test as described before, but heat our samples to 65° C., all the rye and wheat starch is fully expanded, while the starch of the leguminous fruits is almost unchanged; it begins to expand at 66°, and can yet be recognized at 68° C. During wet years, when the grain has germinated extensively, and in consequence produces a flour of poor baking quality, a 2 per cent. addition of bran flour will improve its quality and is certainly preferable to alum or other adulterations; but such mixtures should be marked accordingly.

DETECTION OF ADMIXTURES IN WHEAT OR RYE FLOUR BY CHEMICAL MEANS.

Prof. Vogl has, for this purpose, given the following directions: Take a mixture of diluted (70 per cent.) alcohol, and 5 per cent muriatic acid. Two grams of the flour sample are well shaken in a test tube with 10 ccm. of the mixture, and note taken of the color of the sediment as well as of the liquid in the tube. Sometimes a coloration takes place immediately, and warming accelera'es the action. For this purpose the test tube is placed for a short time into water at a temperature of 60° C. Pure wheat and pure rye flour do not change color under this treatment, and the l quid remains perfectly colorless. In coarser flours, and sometimes with rye flour it takes on a very light yellow tinge. Pure barley and oat flour color the liquid straw-yellow; cockle flour gives a deep orange color to the liquid; it becomes purple red with the flour of vetches or beans; if ergot is present, the liquid assumes a blood red color. For vetches and bean flour the color increases in intensity with the quantity of flour used. An addition of 5 per cent. of vetch flour can thus be detected among rye or wheat by producing a reddish color in the liquid, which becomes violet if the admixture is larger.

EXAMINATION OF FLOUR FOR ACCIDENTAL ADMIXTURES.

Although the prime object of the offered prize was the detection of *intentional* adulterations or admixtures, it will not be out of place to give a few instructions for the detection of *accidental* admixtures.

1. *The cockle. Agrostemma githago.*

Cockles and vetches are the most common impurities found among grains. Fortunately they can be separated by machinery, so that at present but few cockles, which are poisonous, are found among the flour. But for all that, Prof. Peterman, of Gembloux, Belgium, found in 1879 large quantities among wheat and rye meal delivered for use at a penitentary. In unbolted flour, the detection of cockles is easy. A small sample mixed with water in a test tube reveals the epidermis of the cockle as black brownish fragments, some floating on the surface of the water, some settled at the bottom. A shaking up with chloroform, as described before, brings them into a clearer view.

Investigating these fragments of the epidermis by the aid of a microscope, they are so densely colored that it is impossible to determine their structure, but this color disappears on boiling with soda or potash, nitric acid or chloride of lime. Then we have a chestnut-brown epidermis, the cells of which have a wavy margin with the indentations of the one cell fitting into the margin of the next. In addition to this, every cell shows, in a cross section, a large protuberance which has, at times, an irregular concave center. These protuberances can be seen with the unaided eye upon the black epidermis of the cockle; they are again covered by small warts, which appear as little black dots on the surface. During the bolting of the flour these epidermis fragments disappear and we must depend upon the peculiar starch grains, which fill the whole interior of the cockle seed for our determination. Cockle starch grains are of a composite nature and form large unmistakable masses of 25 to 100 mkm. in length and of a spherical or elongated form, composed of thousands of very small starch grains. These latter are spherical little dots of 1 to 2 mkm. in diameter. Owing to their minuteness they move quite rapidly under the microscope, possessing the so-called molecular motion. The large masses are often broken in the flour into smaller portions. The poisonous principle of the cockle resides in the germ which is ring shaped and placed immediately beneath the epidermis.

A detection of cockle among flour by chemical means is given by Petermann as follows: 500 g. of the flour is boiled over the water bath with 1 liter of alcohol of a strength of 85° Tralles, and filtered while hot. Absolute alcohol is added to the filtered mass, which then causes the formation of a white powder and flocculent masses composed of albumen, gum and dextrin. Filter again and dry the residue at a temperature of 100° C., to obtain a coagulation of the albuminoid substances. This dried residue is then extracted with cold water, and the resulting extract mixed with absolute alcohol. A precipitate forms which has to be filtered out and dried. In this manner we obtain a white powder, which has saponaceous qualities; it has a bitter burning taste, and dissolves quickly in cold water, which solution when beaten, produces a permanent foam.

ANCIENT CORN CULTURE.

Originally known as Indian corn, the name of this important breadstuff has gradually changed into plain "corn," says the *Allg. Muehlen & Masch. Ind. Zeitung*. It cannot be doubted that its home is the American Continent, and the opinion of a few investigators, who claim that corn was known in Oriental countries in ancient times, must be based upon an error, as we do not find a single reference to it, neither in writing nor on monuments. It is now generally accepted that corn was introduced into Southern Europe and the Orient not earlier than three hundred years ago. It has not yet been demonstrated to everybody's satisfaction, in which parts of the American Continent the cultivation of corn commenced, but it is probable that the west coast of Soutn America, probably Peru, can claim this distinction. The traditions of the Peruvians tell us that corn was cultivated since time immemorial, and corn cobs have been found in the tombs of the Incas, the ancient sovereigns of Peru. From here the cultivation must have extended at an early date into Middle and North America, and this fact again would indicate a more lively intercourse between the ancient inhabitants than is generally accredited to them. Corn was the staple food of the Maya and Nahua races in Middle America and Mexico. When Columbus landed on Cuba he found there, as well as on many others of the West India islands, large numbers of well cultivated corn fields, and through him the first corn was sent to Europe and planted in Spain in about 1520, from where it gradually spread throughout Southern Europe and Turkey.

When Father Kino, the celebrated Jesuit missionary, the founder of the Spanish missions of Sonora, Arizona and Baja California, arrived among the Pimas and Maricopas, he found these Indians to be agriculturists. Then, during the end of the 17th century, as to-day, they dwelled on the Rio Gila; then, as to-day, they cultivated corn. The so-called Pueblo races in Arizona and New Mexico followed the same practice. But many of the more Northern Indian tribes cultivated corn, even if their principal means of sustenance were obtained by the chase. Corn was found by the first white settlers on the James river as well as in New England, and the Indians of the Mississippi valley cultivated corn when first visited by Marquette.

So we can readily accept that many centuries before the landing of Columbus, corn was the staple food product of all these Indian tribes, from Chilli to the St. Lawrence river, who had, in the course of time, transformed from the nomad-hunters into peaceful agriculturists. But nowhere, prior to the advent of the white man, has corn played a more important role than in Mexico. To understand its importance more fully, we must remember that Mexico, when in the height of its prosperity under Aztecic rulership, was more densely populated than at present. The accounts of the Spanish writers about the number of the inhabitants of the many cities and valleys, the numbers of the Mexican armies, etc., may seem exaggerated, but there are numberless independent indications to prove that Mexico was densly populated during Cortez's time, not only in the plateau lands of Anahuac, but also in the adjoining countries, north, south, east and west, which had gradually been subjugated by the rulers of Tenochtitlan. Without a careful cultivation of the soil, the many millions of inhabitants would have been unable to obtain sufficient food on Mexican territory.

All the old Spanish writers agree that but little fertile land could be found in Mexico which was not under corn cultivation, and they also tell us, that the Spanish troops in their advance into the country had to take very careful precautions against ambuscades of the natives in the high corn. Corn cultivation among the Aztecs was a very simple procedure. The ground was prepared by burning trees and shrubs, and the resulting ashes were the only fertilizers known. Spades and rakes of wood or copper were used to break the ground; plows were as unknown to the ancient Mexicans as draught animals. The Aztec farmer had a stick, the point of which was either of copper or hardened in fire, and with this he made holes in the loose soil, and a few grains of corn were placed in each hole. The field was always very carefully cleaned of weeds, and as the stalks grew, they were supported by a raising of earth around the base. At approaching maturity boys kept watch in the fields to drive away the birds, and the women used to help the men in the easier agricultural work. In many sections of Mexico the fields had to be irrigated, and Cortez himself complained in his reports that the irrigation canals, together with the dense and heavy growth of the corn, offered

some of the most serious obstacles to the advance of his troops. Storehouses for corn were found everywhere in Mexico; they were built of wood, and of a capacity of several thousand bushels. Corn was kept there, at times, several years, but in spite of the precaution, exercised by the government, to keep constantly a large stock on hand, in times of crop failures famines broke out, mostly so during war times, and this is an additional proof of the density of the population of ancient Mexico.

The Tortillas, corn cakes, were baked in Anahuac 500 years ago in precisely the same manner as to-day, and many other food preparations have not changed any more since that time. The best corn was grown on the floating islands in the lakes of Anahuac, if we are to believe the ancient historians. These islands were rafts of light wood, covered with cane and rush and closely intertwined with water plants. Earth to the height of two or three feet was placed on them, and an abundant and varied vegetation was raised on this, independent of any rainfall. Many of these islands were 100 feet long, and some, we are told, were planted with fruit trees. Before the Spanish conquest, and for some time after, the lake of Mexico contained a large number of such floating islands, but they gradually disappeared as the waters of the lake lowered more and more. How important the corn cultivation was to the ancient Mexicans can be seen from their religious rites as well as from the heavy punishment for thefts of field fruits. There was a special Deity of the corn, and during harvest time the priests in an imposing procession, went out into the fields to select the largest ear of corn they could find; this was then carried to the village and offered to the Deity on an altar erected for the purpose. After the festivities attending such ceremony, the corn was carefully wrapped up in a white cotton sheet and preserved until the next seeding time, when it was buried in the field. If the succeeding harvest was rich, the corn-ear was again dug up, cut into many little pieces and divided among the inhabitants as charms against numberless ills.

ABOUT ROLLER MILLING.

II.

The next question which arose was with regard to the number of reductions, and in order to arrive at the solution of this important part of the system we made careful experiments, and I must confess that we arrived only very gradually to satisfactory results. With respect to the break process, we commenced at that time to put in four breaks. Continuing our experiments, we soon were convinced that gradual reduction only would suit the demand of those formerly low grinding countries; a system approaching as near as possible the Austria-Hungarian high grinding, adopting as many as possible of its advantages, without its disadvantages and inconveniences.

The gradual reduction milling may perhaps better be called "Semolina milling" the same as it is called on the Continent, "Griesmuellerei," for it really means produce your flour as far as possible out of reduced semolina into middlings.

Our system of roller milling consists of five different parts: The producing of semolina, the so called break process. The purification of semolina. The conversion of semolina into middlings. The purifying of middlings. The reducing of purified middlings into flour.

Beginning with the break process, the question arise: How many breaks do you recommend? Well, gentlemen, our experience taught us to adopt not less than five, and not more than six breaks. Still, I may tell you, that we erected roller mills with four breaks, and though the bran was clean enough it was torn in pieces, and what was worse than that, instead of making between 8 and 12 per cent. of flour during the break process, we made 20 to 25 per cent. We always found that you want to do your break process with the least pressure, and it is this principle on which we based the construction of our break rollers and our flutes. The break process wants to be a real break process, not a squeezing or a crushing process, and the higher and with the less pressure you are able to run your break rollers, the more semolina middlings and the less flour you will produce. Supposing you have a six break process, the first break may in some respects be called still a part of the wheat-cleaning department, and the results which the first break shows, may be looked at as a test for the sufficiency or insufficiency of your cleaning machinery; for, though to some extent a partisan of the theory that the blue flour produced with the first break arises from the crease and through splitting the wheat, I still believe that wherever you get more than half to 1 per cent. of this blue flour on the outside, this dirty stuff is scraped off the outside of the kernel, consisting of the beard and some particles of the skin. This explains why, in some mills, there is but very little difference between the first and second break, and I know some roller mills in Lancashire where even the second break flour is taken off quite separately. The third and fourth break produce the bulk of semolina middlings, while the fifth and sixth breaks are dedicated to the cleaning of bran.

A trial which we made a few weeks ago, with a six break process on hard wheat, gave us the following results:

7.10 per cent. flour.
70.14 per cent. semolina.
3.78 per cent. fine middlings.
16.74 per cent. bran.

Another trial made with a mixture of half soft wheat and half hard wheat resulted in

12 per cent. flour.
50.20 per cent. semolina.
6.78 per cent. fine middlings.
18.50 per cent. bran.

Running with a different speed of 1 : 3 at a speed of 250 revolutions per minute, and with the following number of flutes, these being sharp edge:

10 flutes 6 inch for the 1st break.
14 " " " 2nd "
16 " " " 3rd "
18 " " " 4th "
20 " " " 5th "
24 " " " 6th "

The proportion between broad bran, considered to be very broad bran and small bran.

Trials which we made at another time to use smooth rollers in connection with fluted ones in the break process, did not give satisfactory results. We tried them for the first break on soft and hard wheat without any advantage, or rather with disadvantage on soft wheat—being crushed instead of being broken.

Presuming that we might get broader bran, we tried then to bring in smooth rolls for the second break, but even here only disadvantages resulted out of this experiment, in as far as we received too great a percentage of fine middlings instead of semolina.

Except for the last break scalper, we use no centrifugals as scalper, but only ordinary ones, and that for the same reason for which, if we can avoid it, we never use a centrifugal for dusting or sizing semolina and middlings—in short, we never use centrifugals, where their adoption may break the semolina and middlings.

We reach now another stage of our system, the purification of semolina and middlings. Most of you, gentlemen, made the experience, that the more of an equal size the semolina and middlings are which are to be sujected to the action of the same purifier, the better and easier this process takes place. For this purpose, we size our semolina into five or six sizes, using a special purifier for each grade. This sizing process by ordinary reels is preferably for its slow and steady movement. Our purifier semolina is then divided into two classes, one of which, the finer one, being quite pure, is now ready for the first reducing smooth roll, whilst the other class, consisting of all the coarse semolina, is subjected to an intermediate process of rolling, sizing and repurifying before it joins the others. In bringing these coarse semolina on to a pair of rolls, which according to the wheat generally in use, may be very finely corrugated or smooth, we just crack them, reduce them to finer ones, without breaking up the germs,—the bulk of which is found amongst these semolina—and, with a production of as little flour as possible, receive (after a process of dressing, sizing and purifying) a class of fine semolina out of these large semolina, which join the others on the second reduction. In this intermediate stage we receive the germs, which are to be flattened by a separate process.

We proceed now to a further part of our system, and this is to purify the middlings which we gained, by reducing the fine semolina and the coarse semolina on separate rollers. The middlings of the fine semolina need only a very slight purification; where, on the other hand, the middlings of the coarse semolina require dusting, sizing and a very sharp purification, by which all the woody fibres and other impurities are extracted. The reduction and finishing of middlings in our system is, as a rule, done entirely on rolls.

THE CHEMISTRY OF BREAD.

The following extracts, slightly condensed, are from an article contributed by W. Mattieu Williams, to the British periodical, "Knowledge." Speaking of adulterants, particularly alum, he says:

Flour, water, salt and yeast, with a little sugar or milk added according to taste and custom, are the ingredients of home-made bread, but "baker's bread" is commonly more complex. There is the material known as "fruit," and another which bears the name of "stuff," or "rocky." The fruit are potatoes, one peck to the sack of flour. This proportion is so small (about three per cent. by weight) that, if not exceeded, it can not be regarded as a fraudulent adulteration. The potato-flour is used to assist fermentation. The instructions prescribe that the peck of potatoes shall always be boiled in their skins, mashed in the "seasoning-tub," then mixed with two or three quarts of water, the same quantity of patent yeast, and three or four pounds of flour. The mixture is left to stand for six or twelve hours, when it will have become what is called a ferment. After straining through a sieve, to separate the skins, it is mixed with the sack of flour, water, etc. The baker uses it for improving the bread, from his point of view.

The stuff or rocky consists of one part of alum to three parts of common salt. The bakers buy this at 2d. per pound, and they believe it to be ground alum. They buy it for immediate use, being subject to a heavy fine if they keep alum on the premises. The quantity of the mixture ordinarily used is eight ounces to each sack of flour weighing 280 pounds, so that the proportion of alum is but two ounces to 280 pounds. As one sack of flour is (with water) made into eighty loaves weighing four pounds each, the quantity of alum in one pound of bread amounts to $\frac{1}{160}$th part of an ounce. The *rationale* of the action of this small quantity of alum is a chemical puzzle. That it has an appreciable effect in improving the appearance of the bread is unquestionable, and it may actually improve the quality of bread made from inferior flour.

It appears to be a fact that this small quantity of alum whitens the bread. In this, as in so many other cases of adulteration, there are two guilty parties—the buyer who demands impossible or unnatural appearances, and the manufacturer or vender who supplies the foolish demand. The judging of bread by its whiteness is a mistake which has led to much mischief, against which the recent agitation for "whole meal" is, I think, an extreme reaction. If the husk, which is demanded by the whole-meal agitators, were as digestible as the inner flour, they would unquestionably be right, but it is easy to show that it is not, and that in some cases the passage of the undigested particles may produce mischievous irritation in the intestinal canal. My opinion on this subject (it still remains in the region of opinion rather than of science) is that a middle course is the right one, viz., that bread should be made of moderately dressed or "seconds" flour rather than over-dressed "firsts," or undressed "thirds;" *i. e.*, unsifted whole-meal flour. Such seconds flour does not fairly produce white bread, and consumers are unwise in demanding whiteness. In my household we make our own bread, but occasionally, when the demand exceeds ordinary supply, a loaf or two is bought from the baker. I find that, with corresponding or identical flour, the baker's bread is whiter than the home-made, and correspondingly inferior. I may say, colorless in flavor, it lacks the characteristic of wheaten sweetness. There are, however, exceptions to this, as certain bakers are now doing a great business in supplying what they call "home-made" or "farm-house" bread. It is darker in color than ordinary bread, but is sold nevertheless at a higher price, and I find that it has the flavor of the bread made in my own kitchen. When their customers become more intelligent, all the bakers will doubtless cease to incur the expense of buying bleaching material.

The article closes with the following suggestions about stale bread: The difference between new and stale bread is familiar enough, but the nature of the difference is by no means so commonly understood. It is generally supposed to be a simple result of mere drying. That this is not a true explanation may be easily proved by repeating the experiments of Boussingault, who placed a very stale loaf (six days old) in an oven for an hour, during which time it was, of course, being further dried; but, nevertheless, it came out as a new loaf. He found, that during the six days, while becoming stale, it lost only one per cent. of its weight by drying, and that during the one hour in the oven it lost three and one half per cent. in becoming new, and apparently more moist. By using an air-tight case instead of an ordinary oven, he repeated the experiment several times in succession on the same piece of bread, making it alternately stale and new each time.

For this experiment the oven should be but moderately heated—130° to 150° is sufficient. I am fond of hot rolls for breakfast, and frequently have them *a la Boussingault*, by treating stale bread-crusts in this manner. My wife tells me that when the crusts have been long neglected, and are thin, the Boussingault hot rolls are improved by dipping the crust in water before putting it into the oven. This is not necessary in experimenting with a whole loaf or a thick piece of stale bread.

ACCORDING to published statements, not a single individual riding on a passenger train in Massachusetts was killed the past year, unless the cause was directly traceable to the carelessness of the person killed. Over 61,000,000 passengers were carried, at an average distance of fifteen miles each.

UNDER TWO FLAGS.

JACKSON, MICH., AND STRATFORD, ONT., JOIN HANDS FOR A DAY'S FROLIC.

ANNUAL EXCURSION OF THE EMPLOYES OF THE GEO. T. SMITH MIDDLINGS PURIFIER CO.

We give some particulars, gathered from the Jackson *Daily Citizen* of July 28th, touching this very creditable and pleasant picnic. Saturday, July 26, was a memorable day for the officers and employes of the Geo. T. Smith Middlings Purifier Company, the occasion being their second annual excursion to Detroit and St. Clair. The day opened inauspiciously, with a drenching rain, which poured steadily until 6 o'clock, the hour fixed for departure, when the clouds broke away in the west and the rain ceased for a brief time. In spite of the rain, Mr. Geo. T. Smith was early at the Michigan Central depot, and ordered the train held half an hour, so that none of the party might be left behind. An immense throng surged about the depot platform with the uneasy motion peculiar to an excursion party awaiting the order to go. When the cars backed down to the depot, sixteen first-class coaches in all, they were greeted with cheers, and a grand rush was made for seats, of which there were plenty. About 1,000 tickets were issued, and they were all used. A splendid silk banner with the name of the company, and a fine oil painting of the middlings purifier in the center on one side and a centrifugal reel on the other, was displayed by the employes, attracting much attention and admiration. The start from the Michigan Central depot was made at 6:30 without incident, all the happy excursionists being comfortably seated aboard and their well-filled baskets stowed safely away. A single powerful engine, No. 248, pulled the long train with a steady rate of speed. The first stop was made at Ann Arbor at 7:30, in the midst of a driving rain; the second pause was at Ypsilanti, to let the express pass, and it was still raining heavily. Only two more stops were made, at Wayne and at Grand Trunk junction, as the law requires, and the long train swept proudly into the Detroit depot at 8:53, making the unequalled run from Jackson to Detroit, with four stops, in two hours and twenty-three minutes. It was still misty, and the few idlers about the depot were amazed to see such a crowd of people and to read the streamers on the engine announcing that this was the George T. Smith Middlings Purifier excursion from Jackson. It was amusing to hear the witty Detroiters offer to surrender the town, threaten to call out the state troops, and gravely inquire if anyone was left in Jackson to keep the stores open.

The steamer Garland lay at the Michigan Central wharf, in charge of Captain W. L. Horn, a river man who knows every buoy, bar and light from Detroit to Port Huron. The transfer from the cars to the steamer was effected quietly and speedily, but the clouds were so dark and the day so disagreeable that some of the party decided to remain in Detroit. The fine band, belonging to the Purifier Company, took their station on the upper deck of the Garland, and, while the excursionists were getting settled on board, treated the Detroiters to some inspiring music. They were rewarded with liberal cheers as the boat steamed away at 9:30. It was a glorious ride up the Detroit river, across beautiful lake St. Clair, through the "flats," studded with emerald gems of islands, reminding one of Venice, with their numerous ornamental summer residences and gaily painted boat houses, and on past Marine City, past the Oakwood Mineral Springs hotel, past the famous Somerville school and the innumerable pretty views on either shore, until the steamer finally landed its merry cargo at "Shady Side," three miles beyond St. Clair on the American shore, at 2:45 P. M., making the run from Detroit in five hours and fifteen minutes. Mr. Smith had sent ahead a party of workmen, who fitted up the grounds, bringing cook-stoves, tents, and other camp paraphernalia for rustic enjoyment, which added to the dancing pavilion, swings, tables, benches, etc., made the cool shady grounds as delightful a picnic spot as one could wish to see. It had rained very little at Shady Side, and the grounds were perfectly dry—the sun shone lazily through fleecy clouds, and all agreed in pronouncing it a perfect day. The Jackson party were greeted with loud cheers and national airs from the Stratford branch of this international excursion, who, accompanied by the St. Mary's (Ontario) band, altogether numbering nearly 500, had arrived about noon on the steamer Mary, from Port Huron. Many of the Stratford party were formerly residents of Jackson, and welcomed their former associates with every demonstration of delight.

Pictures of the crowd at the landing, together with views of the Geo. T. Smith Company's tent and various interesting spots on the ground were taken by L. F. Wheeler, of Tecumseh, the artist who accompanied the Jackson party. The St. Mary's band discoursed delightful music at intervals, while the Jackson people spread the contents of their baskets on the green sward and scattered about in groups to enjoy their bountiful picnic dinner. Mr. Smith's tent was converted into a dining room, where the ladies served an elegant repast to the managers of the company and their invited guests from home and abroad. When the feasting was concluded and all parties feeling particularly happy, the Smith band took the stand and showed their Canada friends that they, too, had music in their horns.

The large audience was then called to order by W. K. Gibson, Esq., of Jackson, who informed the expectant listeners that they were such good-looking people he would much sooner look at than talk to them; but the occasion was one which called for expression in words of praise and thanks. Said he: "We are gathered here to-day under most pleasant social relations, upon the banks of this stream which bears the waters of the great northern lakes to the Atlantic ocean. Some of us come from the beautiful peninsula formed by these waters, and others from the province of a queen, who, from her girlhood, has worn a secure crown above as noble and true and loyal heart as ever beat in the breast of woman. This gathering has a significance far beyond its mere social aspect. A significance which touches in a very marked degree the true relations between capital and labor, and indicates one method by which such relations may be happily adjusted. Here on this spot capital and labor have met to shake hands and congratulate each other on the benefits each has been able to bestow. The principle embodied in the Smith middlings purifiers, and which was destined to make entire revolutions in the manufacture of flour was from the first very clear and well defined in the mind of Mr. Smith, but it was necessary that that idea should be embodied by intelligent workmen in a machine which should be able not only to work out the results sought, but be as perfect as possible in its operation and work. The company started out upon the idea that success required something more than the prestige of a fortunate invention and that perfect machines and honest work were necessary to continued growth and permanent success. The policy was inaugurated and has been continued ever since, of employing, not merely workmen of skill, but men who were honest, intelligent and sober, careful of their reputations as workmen and citizens. Under such a policy the business of the company has grown, until to-day there is no country where wheat is grown and flour made where the Smith middlings purifiers are not used; and wherever they have gone, whether into the mills of England, and of France, and the other countries of Europe, they have challenged the attention and won the praise of the best mechanics for their perfect construction and successful working. To this company its workmen are not mere machines, mere operatives, like the factory laborers of the Old World, but men who are reputable as citizens, who bring brain and intelligent skill to their work. By such men this company is looked upon as an associate with them in their work, furnishing their capital for its success, proud of the intelligence and skill of its workmen and ever ready to recognize their true place and position as men among men. So far as this company is concerned capital and labor have united, to solve for themselves the great problem which has so long disturbed the political economists. My friends, let it go out to the world, as it is true in fact, that employers and employes have one common aim, and that is that the success of this company, now and hereafter, shall stand upon honest, perfect work, done by intelligent, sober, skillful men. It is in appreciation of such efforts and aims on your part, that the officers of this company have given you this excursion, affording a day of rest and sound enjoyment, in which we all can take a part."

Mr. Gibson closed his address, amid great applause, by complimentary allusions to the audience before him, especially the ladies, and hinted that something more important was to follow. He declined to occupy further time, but introduced Col. Rodney Mason, attorney for the company, of Washington, D. C., who stepped forward, and, in a neat appropriate speech, presented to George T. Smith and George S. Bennett, officers of the company, the beautiful silk banner as a testimonial from the employes in the works at Jackson. Col. Mason is a handsome gentleman with a white moustache, white hair, a pleasing voice, and a short and stout figure. "I am requested," he said, "on the part of my fellow-employes, to present, in their behalf, to the president, directors and stockholders of the George T. Smith Middlings Purifier Company, this elegant banner as a testimonial of their regard and respect. It is not my purpose in presenting it to make any extented speech. Those of you who know my relations to this company are aware that it would take two or three days for me to tell all that I know in regard to the development and merits of this invention; but that all belongs to another time and another place. At present it must content me briefly to make this presentation. We represent here to-day two nationalities: some have their pride in following the meteor flag of old England, others give their allegiance to the starry banner of the Union of states. Without sacrificing our devotion to either we can unite in loyalty to this banner to which we give a common fealty. To you, Mr. Smith, I now transfer this ensign which I feel assured you will value for its beauty, its fitness and especially because it is a testimonial of the kindly regard entertained for you by all those who are in your employment and who cordially unite in this presentation." Col Mason's speech was cheered enthusiastically. When the applause had subsided sufficiently to render one's voice audible, Mr. Gibson took the stand and said that Mr. Smith was a very modest man while Mr. Gibson was not so modest, therefore Mr. Smith requested him to thank the employes of the company for the gift of this exquisite banner. He said: "In behalf of the officers of the George T. Smith Middlings Purifier Company, I accept this as a token of your kindly feeling towards them. It is true, as Col. Mason has said, that we come here from under the flags of different nations, but I see upon this banner a painting of one of the products of your mechanical skill and I recognize the great fact that the progress of every nation depends upon honest intelligent labor, and that this is a common ground upon which we may all stand. This banner will always signify to the officers of the company that you understand and recognize the true relations of labor and capital as they exist between you and them.

The exercises closed with music by both bands, and the floor was cleared for dancing, in which pastime the young people engaged merrily till 6 o'clock, when they adjourned to the deck of the Garland, and continued the amusement all the way to Detroit. It was very nearly 11 o'clock when the transfer from the steamer to the cars took place at the depot, where all was in readiness, and the train started at once for home, where it arrived without incident or accident at 1:44 standard time. Doubtless no one ever beheld a sleepier company of people, one or more completely tired out, but they reasoned that they "had all day to-morrow to sleep and rest," so it made no difference. Mr. Smith and the company spared no expense to secure the best car and boats for both the Jackson and the Stratford parties, and the skill with which it was managed shows they know how to get up an excursion as well as a purifier. In conversation Mr. Smith said he cared nothing about the expense—he did not know what it had cost, but he paid all the bills and hoped the boys had a good time. He said there was nothing that did him more good than to see the warm good feeling that existed among all the purifier employes for themselves and for the company.

SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1½ cents for each additional word. Cash with order. Three consecutive insertions will be given for the price of two.

SITUATION WANTED

By a young man having experience with stone and rolls as first or second miller. Best recommendations. Address stating kind and capacity of mill, BOX 247, Vassar, Mich. 14

SITUATION WANTED.

In a custom grist or flouring mill by a man who has had about two and one-half years' experience as a miller, and can furnish best of references. Address, T. H. NICHOLAS, Forestville, Chautauqua County, N. Y. 6tf

WANTED.

A situation in a mill, by a man with a small family, who has been running burr mills for a number of years. Address, WM. H. WOLLERTON, McElhattan P. O., Clinton county, Pa. 1518

SPECIAL ADVERTISEMENTS.

Advertisements of ***Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange,*** *etc., etc., cost 1½ cents per word for one insertion, or 4 cents per word for four insertions. No order taken for less than 50 cents for one insertion, or $1 for four insertions.* ***Cash must accompany the order.*** *When replies are ordered sent care of this office, 10 cents must be added to pay postage.*

WANTED.

Wanted immediately, a competent miller to take charge of a custom mill. Steady work and fair wages to the right kind of man. Address, with terms and references, F. B. MAYHAM, Hobart, N. Y. 1316

WATER WHEELS WANTED.

About 25 inches and less, iron turbines in good condition (first-class). State condition and name of wheel and lowest cash price on cars there. F. WAYLAND, Kanona, Steuben county, N. Y. 1415

A BARGAIN.

One 16-inch under-runner, full iron frame, middlings mill, made by C. C. Phillips, Philadelphia. It is brand new, has never been used and will be sold at a big bargain as I have now no use for it. Address C. 91, care THE MILLING WORLD, Buffalo, N. Y. tf

YOU CAN BUY THESE CHEAP.

Three McCully Corn Cob Crushers.
The above articles are brand new, in perfect condition, just as they left the factories, and will be sold very cheap for cash. Address S. 30, care THE MILLING WORLD, Buffalo, N. Y. tf

FOR SALE CHEAP.

One 6-horse power engine and 10-horse power boiler, all complete, price, $350; one 8-horse power engine and 10-horse power boiler, price, $375; one 10-horse power Portable complete, price, $350; one 10-horse power Russell Traction, price, $500; one 4-horse power vertical engine, price, $120. Call or address for particulars EZRA F. LANDIS, Lancaster, Pa. 262

FOR SALE.

Water mill at Whitehall, Trempeleau county, Wis. Mill built in 1878. Five run of stone. Mill easily converted into roller mill. Plenty of water all seasons. Good custom trade. Can command trade of Wisconsin Pinery. Home demand for all. Wheat supply from first hands. Mill forty rods from Depot. Side track to mill can be procured. Whitehall is a thriving town and county seat. Good reasons for selling. Address, WHITEHALL MILL CO., Whitehall, Wis. 7tf

FOR SALE!!

Nine full set of the celebrated Stevens rolls, made by the John T. Noye Mfg. Co., Buffalo, N. Y. Six of them were sent to the Commercial Mills, Detroit, Mich., in December last, but were taken from there without having been put in operation, or having been touched by fire, and our rolls substituted. They were made from the present patterns of the John T. Noye Mfg. Co., and have their late so-called Holt belt drive (or words to that effect). We will furnish smooth rolls with these machines, or any kind of corrugations, to parties who may object to the Stevens corrugations. Three set we have recently taken from the celebrated Elkhorn Mills, of H. D. Rush & Co., Leavenworth, Kan., where our rolls are being placed. All of these rolls were made at Ansonia, Conn., and are of the same make as those used by the John T. Noye Mfg. Co. We offer these rolls at half list price. Please write for particulars. Respectfully,

NORDYKE & MARMON CO.,
Indianapolis, Ind.

The Milling World
and CHRONICLE of the GRAIN and FLOUR TRADE.

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Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

ADVERTISING.

Card of Rates sent promptly on application Orders for new advertisements should reach this office on Tuesday morning, to insure insertion in the week's issue. Changes for current advertisements should be sent so as to reach this office Saturdays.

EDITOR'S ANNOUNCEMENT.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or he grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with any manufacturing or mill furnishing business. Its editorial opinions cannot and will not be influenced by a bestowal or refusal of patronage. It has nothing for sale, but its space to advertisers and itself to subscribers.

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MILLERS' ASSOCIATIONS.

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HOW TO LOOK AT IT.

WHEN the news is telegraphed to all quarters of the globe that "Mr. So and So," alone or with others, is buying up the grain for the purpose of a "corner," all the knowing ones with an "I-told-you-so" look on their gloomy features, tell everybody whom they can buttonhole, that this sort of thing is going to ruin the grain trade entirely. We have even been told recently that our export trade is at times seriously embarrassed by actual or threatened corners. Without going into a consideration of the effects of such procedures, it seems rather curious to us that the same journals which can devote column after column to the discussion of "corners," entirely ignore other items, which, although not known as "corners," are exceedingly corner-like.

The men who buy up all the grains of the market, do so for the purpose of individual gain, and to enable them to name any price they please; they purchase in this case all, or nearly all, the raw material of the land, and thereby exclude competition. On the other hand, when certain articles are manufactured by a few firms only, and these firms associate in order to avoid competition among themselves, and keep the prices of their product up to a figure which they desire, then we call such a combination an "Association," not a "corner," although the article, the price of which is controlled by such association, may be just as necessary in every day life as the grain. We are told, for instance, that anthracite coal combinations cut off the supply of dealers who sell their coals at prices lower than that fixed by the leaders. Now we have associations in the various departments of the paper trade and iron industry; associations of dealers in wooden ware, patent medicines, nail manufacturers, barbed wire manufacturers, of publishers of school books, and scores of others. Their purpose is, very ostentatiously, to prevent over-production, but the real purpose is to limit production, control the market, and to prevent competition in order to sell at prices announced by themselves.

When railroad companies associate for the same purpose, we call it a "pool," and yet their aim and purpose is the same. Whether pool, association or corner qualitative, there is no difference. True, we are living in a free country, and when manufacturers charge prices which we don't want to pay, we need not purchase the article if we can do without it; besides nobody hinders anybody from starting a factory himself. But those who would be willing to go into such an active competition, may not have the money; and those who have the money may not have the ability or inclination; or the articles in question may be so carefully guarded by patents that no outsider is allowed to make them. We may as well say, build a railroad yourself, if you don't want to pay the charges asked, or raise your own wheat, if the "corner" owns all.

If you ask "What are you going to do about it?" we say: Nothing! Such things all regulate themselves. We would merely protest against those, who advocate government interference to prevent corners or other speculations, because it would be impossible to state, where such laws could *not* be applied in some way or other. History teaches us that such "combinations" and "associations," commonly called "monopolies" grow until they become unbearable, and then we find rivals springing up, competition ensues, and charges attain again a healthy basis, as witnessed but recently in the case of the Western Union Telegraph and in the Atlantic cables. Social improvements are of slow growth, and all our present corners, pools, and other abnormalities of life, are necessary for future better conditions; they will aid coming generations in a better understanding of the relations between people and commerce, between supply and demand, and as such they fill a useful mission in the development of the country. Centralization is the present tendency of all departments of political economy, and "monopoly" is simply another form of it. In the course of time all kinds of centralization will have to remove their objectionable features and become acceptable to all, but their present form is simply one phase of their natural development, and as such necessary, and while we feel sorry at the present time that our age is doomed to endure the afflictions of corners, pools, associations, etc., we must not forget that they are the natural outgrowth of the present status of the industry and commerce of the country. Like the machinery, which throws, primarily, large numbers of men out of employment, but ultimately helps to improve their condition, we must accept the issue as we find it, and not as we think it ought to be. If history teaches us anything, it teaches us that governmental interferences for the general, as well as for the special, regulation of any branch of industry and commerce, have at all times done more harm than good; they may have been apparently beneficial for a short time, but the advantages have generally been more than outweighed by the disadvantages incurred to mankind at large.

IN contrasting sundry Illinois and Indiana flours from this year's crop with those of similar grades from last year, we find a striking difference, says the N. Y. *Produce Exchange Reporter.* The wheat grown upon the same soil last year, was so radically different in its constituents; it can only be accounted for on the assumption that the last crop never properly matured, owing to unfavorable atmospheric conditions; constant changes of temperature and lack of moisture in the soil, preventing the plant from obtaining the proper sustenance from the ground, and the required amount of light and heat from the sun. It is very gratifying to learn that with 14 or 15 pounds less of this year's wheat, a better barrel of flour can be made than from last year's crop, hence the exporting power of the country is much greater on a given number of bushels than last year, The excellent quality of the new winter wheat brands, the urgency with which they have been offered, and the low prices accepted for them, have exerted a marked impression on the minds of buyers. It must be very plain to all millers that purchasers will be at an advantage during most of the season, especially if Hungary, Germany, France and England have the good fortune to harvest fair or good crops.

THE United States Treasury Department's monthly statistics of all exports and imports of foreign commerce and of immigration will not be issued hereafter, as Congress in its wisdom has considered it essentially necessary for the welfare of the country to be as economical as possible, and the few thousand dollars needed annually for the printing of these monthly statements were deemed a useless expenditure. It is simply another illustration of the large amount of knowledge about the industrial and commercial welfare of the land, that is to be found in the average law-maker; economy is preached about a few thousand dollars expended for a very useful purpose, and hundred thousands are squandered in useless undertakings. If only a fair minority of the members of Congress had had any idea about the value of such statistics, the vote on this "economical measure" would undoubtedly have been different. Fortunately we are told that the chief of the statistical bureau intends to issue a limited number of such reports, reproduced in some way or other, and send them as usual to the leading papers of the country.

AS we begin to understand the nature of the various forms of diseases with which the human flesh is afflicted, they begin to lose their terror. The yellow fever, which has so often been the scourge of our Southern States, after a careful study by Brazilian physicians, is pronounced preventive. A letter to the *Sanitary News* by Prof. Freire, of Rio Janeiro, states that after a long series of careful experiments on lower animals, he vaccinated 450 persons, mostly foreigners, with the modified yellow fever germs, and after passing through a severe epidemic, only six deaths out of the 450 were reported, or two in a hundred, while thousands died of the unvaccinated, whose death rate varied between 30 and 40 to each hundred. This is good news indeed. With the improved and improving sanitary condition of our Southern states, and a vaccination of the inhabitants against yellow fever, much suffering will be avoided, and one of the checks to the prosperity of the "yellow fever states" will be removed.

THE idea of mutual mill insurances, recently advocated by our St. Louis contemporary, receives additional importance when we are told by the *Millers' Gazette* that one of the oldest fire insurance companies of Great Britain recognizes the soundness of the scheme for mutual protection from fire, as promulgated at the recent millers' convention at Stockton; and is ready to join heartily in working out the details and afterwards extending protection to such millers as shall come under the provisions of the proposed regulations. Several other companies express approval, but prefer inaction, awaiting a further development of the scheme. It seems that the English fire insurance companies are more liberal in these matters than our own, who, according to their journals, have nothing else but sneers for anything in the "mutual" line.

IN order to determine the qualities of the different wheats used in milling throughout Germany, the President of the German Millers' Association, has repeatedly called upon the millers to send him samples of their wheats, together with any additional details thought necessary. It seems that the members of the dusty profession do not respond very liberally, as the call had to be renewed at their last meeting. Perhaps it does not strike the millers as advantageous to have a careful chemical analyses made of the different wheats, somewhat like the work done last year by our Agricultural Department, which would enable them, as well as outsiders, to have definite knowledge of the different wheats used, separately or mixed, in the production of flour.

ALTHOUGH the Patent Office, Washington, has up to date earned about $2,000,000 above expenses, we are told it is six months behind in its work of examining the claims of inventors. Another "inventor's meeting," like the one recently held at Cincinnati, and backed by all the intelligent journals of the United States, seems to be necessary to have the Patent Office supplied with a number of assistants large enough to do the work necessary for the business of the inventors of the country. Deficient help in the Patent Office is inexcusable, because it is not only self supporting, but has accumulated a large surplus fund from the fees paid by the very men whose interest are now so shamefully neglected.

THE question whether incandescent electric lighting in mills was an absolute safeguard against dust explosions, was recently answered by the Electrical Society of Germany, by stating that as long as the globes surrounding the incandescent films, were intact, the mill was safe, but when the globe was broken by some accident or other, the danger of a dust explosion was as great with the electric as with any other open light. The society recommends as additional means of safety a double globe of glass surrounding the light to prevent any contact with dust in case one globe should break.

WE are told that at the forthcoming meeting of the Banker's Association at Saratoga, the question of how to prevent defalcation, is to be discussed. This is something that will interest every business man of the world, and we hope the matter will be treated in an exhaustive and comprehensive manner. If the Bankers' Association can devise some means to check this growing evil, it will deserve the thanks of the masses.

WHILE numbers of English, and almost all of the French millers are as yet experimenting and studying the question of roller milling, Belgium has quietly taken possession of the modern system, and holds mills with all the latest improvements, according to the report of the French Consul at Antwerp to his government. Belgium has already developed a center for the milling industry in Louvain, where about 200 pair of rolls are in operation in the various mills reducing annually 20,000,000 francs worth of grain.

EUROPEAN railroads differ from the Americans in more than one respect. American roads increase their freight rates as the season advances and business increases. According to the latest news, the Austrian railroads, in view of the forthcoming harvest have reduced their freight charges on agricultural and milling products, much to the advantage of the milling fraternity.

PROPOSALS to furnish motive power for the New Orleans exhibition have so far resulted in the acceptance of 23 engines with 5,360 horse power.

NEW INVENTIONS

IN MILLING APPLIANCES.

AUTOMATIC FEED DEVICE.

Letters Patent No. 302,432, dated July 22, 1884, to William Schwarting and John F. Traster, of Wolcott, Iowa. The object of this invention is to insure steady and uniform feed of material to grinding-rollers and wherever any material is to be supplied from a feed hopper. To that end the invention consists in an attachment for hoppers which, being connected to the feed-gate and pressure-board, effects the regulation of the feed. Fig. 1 is a front elevation of a feed-hopper with the attachment applied. Fig 2 is an elevation of the hopper with one side broken away to show the interior. Fig 3 is a vertical cross-section, and Fig. 4 a plan view of the hopper; and Fig. 5 is a cross section of a double hopper with the improvement. The hopper A is of ordinary character, having a feed-roller, *a*, at its outlet, hinged pressure-board *b*, and sliding feed-gate *c*: and *d d* represent the grinding-rolls. Across the upper part of the hopper A is a shaft, *e*, having an arm, *f*, that is connected by a cord or wire, *g*, to the pressure-boards *b*, and the shaft is also fitted with a cam, *o*, between lugs *h h* on the feed-gate *c*. On the end of the shaft extending outside the hopper is an arm, *i*, to which is attached a rubber or other spring, *k*, so attached to the hopper also that it raises the arm *i* and turns the shaft in a direction to raise the pressure-board *b* and close gate *c*. By applying a scale, *l*, on the hopper the arm *i* is utilized as an indicator to show the position of the gate. In the operation of the device the hopper being supplied with the material, the weight or pressure on the board *b* causes the latter to descend more or less, and thus reduce the space between the end of the board and side of the hopper, so that the material escapes slowly. At the same time this downward movement of the board turns the shaft *e*, and the cam *o* raises the gate *c*. Any slackening of the pressure allows the board *b* to rise, and the gate is closed to the same extent, the action being thus automatic. The shaft with the arm and cam may be placed outside the hopper, if preferred. In applying the device to a double hopper it is to be arranged as shown in Fig. 5, one shaft being extented through with an indicator-arm on each end.

CENTRIFUGAL BOLTING-MACHINE.

Letters Patent No. 302,480, dated July 22, 1884, to William E. Gorton, of Chicago, Illinois. This invention relates to that class of reels for bolting flour and middlings which are known as centrifugals or centrifugal reels. It has for one of its principal objects to provide a construction whereby, in the operation of bolting, the lighter and feathery or fluffy materials may be withdrawn from the mass being operated upon without also carrying off material that should be retained. Another object is to prevent obstruction of the meshes of the bolting-cloth, and still another to improve the action of the bolting-cloth in its lower portion. In the accompanying drawings, Figure 1 is a longitudinal vertical section of a centrifugal reel containing the improvements. Fig. 2 is a transverse section through *x x* of Fig. 1, looking in the direction indicated by the arrow *x'*. Pig. 3 is a view of the rear end or head of the reel having a portion of the outer hub-casting thereon broken away. In the operation of a machine constructed as shown, the suction-fan C will induce an air-current radially inwardly through the bolting-cloth, through the spaces between the beater-blades, through the slots or operings *e* between the troughs E, through the apertures *d'* of the drum D, and outwardly through the trunnion H^2 and discharge-chamber I to the fan-chamber. The object of this air-current is to separate and carry off the light and feathery substances, to prevent the obstruction of the bolting-cloth G, and in some degree to counterbalance the force of gravity operating in the lower portion of the bolt to load the cloth and obstruct its meshes at this point. This last effect is obtained by the division of the space exterior to the bolt by partitions M and the provision of the register N', by which the air-draft through the several upper and lower parts of the bolt may manifestly be relatively controlled. The construction shown is designed to withdraw the light and fluffy particles without also carrying away the fine flour or middlings. To this end the shelves or troughs E are constructed and arranged to arrest and receive the denser material that fails to pass the meshes of the bolting-cloth at any one of the centrifugal impulses imparted thereto, when the same rebounds or falls from the cloth. In such inward radial movement of the flour or middlings, and because of the form of the troughs and their direction of motion, said flour or middlings will naturally strike the rear portions of the troughs, and owing to the outwardly and rearwardly inclined direction of said troughs, as viewed in Fig. 2, said material so arrested at once slides backward upon and is hurled outward by said rear and outer parts of the troughs. The slots *e* for the passage of the fluffy material placed at the front edges of the troughs will, therefore, not afford escape or passage for the relatively dense flour or middlings, while if an air-current of sufficient strength be employed the said lighter particles may be drawn from the dissipated or flying mass and carried inwardly through said openings *e*. The division of the space surrounding the drum into chambers and the employment of several separately-operable registers D^2 within the drum enables the force of said air-current to be varied at different parts of the bolt, such regulation being commonly performed with reference to the relative closeness of mesh in the several sections of cloth of which the bolt-clothing in this, as in bolts generally, is usually composed. In the lower portions of the horizontal form of the bolt such inward air-current will also operate to loosen the substance being bolted and lessen the accumulatitn of material and to prevent obstruction thereby at this part of the bolt.

Fig. 1

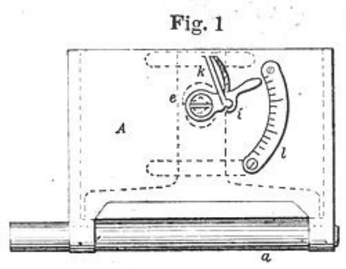


Fig. 2

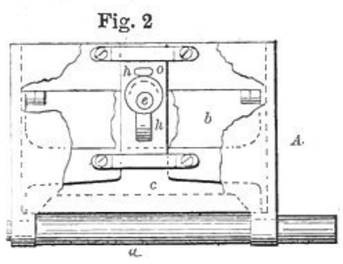


Fig. 5

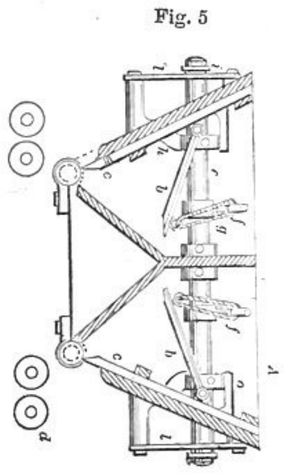


Fig. 3

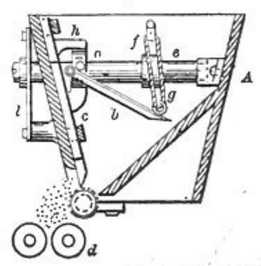
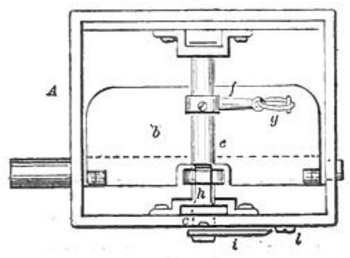


Fig. 4



PATENT NO. 302,432. AUTOMATIC FEED DEVICE.

Fig. 3

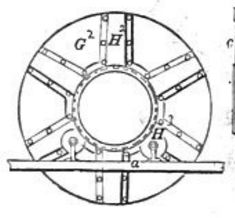


Fig. 1

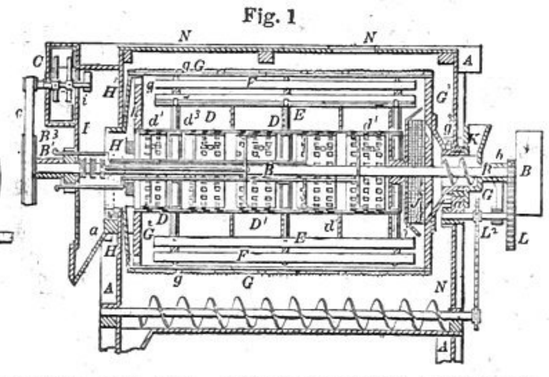
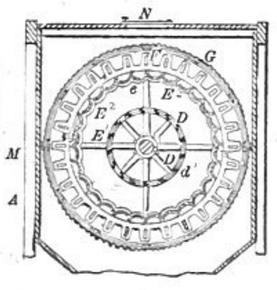


Fig. 2



PATENT NO. 302,480. CENTRIFUGAL BOLTING-MACHINE.

Fig. 1

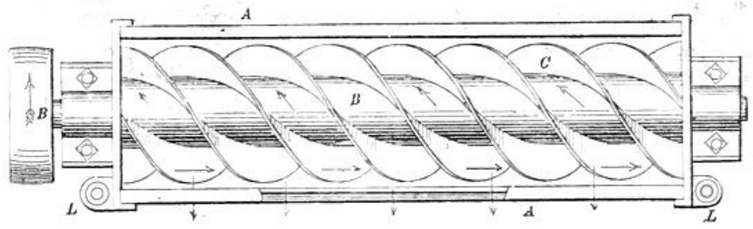


Fig. 3

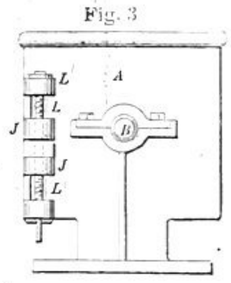


Fig. 2

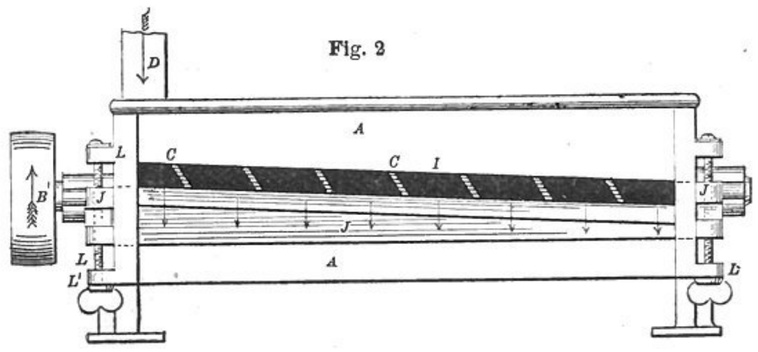
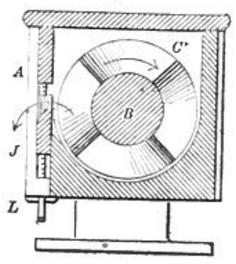


Fig. 4



PATENT NO. 302,501. FEED REGULATOR.

FEED-REGULATOR.

Letters Patent No. 302,501, dated July 22, 1884, to Frederick Kruse, of St. Louis, Mo. This invention relates to an apparatus for feeding flour-rolls, middlings-purifiers, and for use for all such purposes where an even distribution of feed is required, and is adapted either for grain or ground stuff. Figure 1 is a plan view, the top and feed spout being omitted. Fig. 2 is a side elevation. Fig. 3 is an end view, and Fig. 4 is a vertical transverse section taken on on the line 4 4, Fig. 2. Referring to the drawings, A represents the frame or trough of the conveyer, B the shaft, and C the flights. B' represents a driving-pulley on the shaft B, and D represents a feed-spout. In the front wall of the conveyer-trough is an opening, I, at the lower part of which is an inclined logitudinal strip, J, over which the material is thrown in a thin sheet, as shown by the arrows in Figs. 1, 2, and 4. The material is raised by the flights of the conveyer until it comes to the opening I when it is discharged, and the strip J being inclined highest at the head or feed end of the apparatus, an even sheet of material is discharged, whereas if the strip were straight or horizontal there would likely be a greater discharge at the head than elsewhere, because of the appratus being fed at that end. The strip is supported on screws L, supported in lugs L', by which it can be raised and lowered to regulate the discharge of the apparatus, and one end can be raised more than or without raising the other end, so that the discharge will be kept uniform throughout the length of the apparatus.

RECENT LEGAL DECISIONS.

(Bradstreet's.)

Where a party is in possession, under a tax title *prima facie* valid, a seizure of the property cannot be legally made by third parties to enforce claims against former owners, but a direct action must first be resorted to annul the title. So held by the Supreme Court of Louisiana in case of Gerac et al. vs. Guilbeau etal.

In the recent case of Mullins vs. Brown et al. the Kansas Supreme Court held that a check on a bank is not *prima facie* evidence of the payment of the original debt, and that a check drawn in favor of the debtor's agent is clearly not *prima facie* evidence of the payment of the debt to the creditor, even if the creditor assents that the check shall be so drawn. In order that a check on a bank shall be payment of the original debt the court holds that it must be agreed by the parties that it shall be such payment and taken by creditor as payment.

Where parties enter into a written contract and about the same time they with others make an independent parol contract whose stipulations do not interfere with or prevent the performance of the stipulations of the written contract, and where the stipulations of the written contract may be performed whether the stipulations of the parol contract are ever performed or not, the written contract is binding upon both parties, whether the stipulations of the parol contract are ever performed or not, and even though it might have been the intention of one of the parties at the time of making both of such contracts never to perform the stipulations of the parol contract. So held by the Supreme Court of Kansas in the recently decided case of Bierer et al. vs. Fretz.

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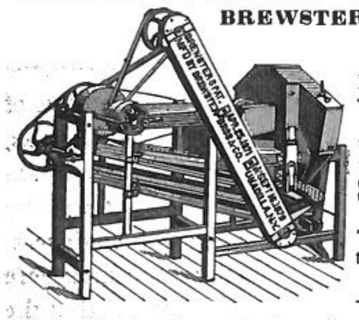

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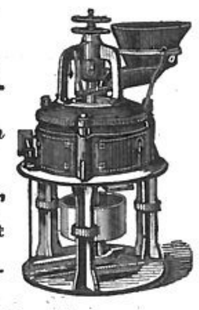

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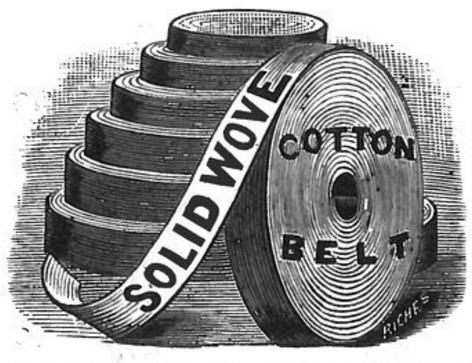

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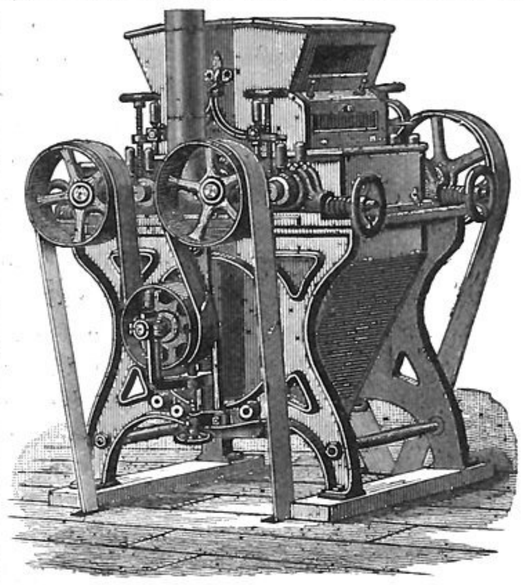

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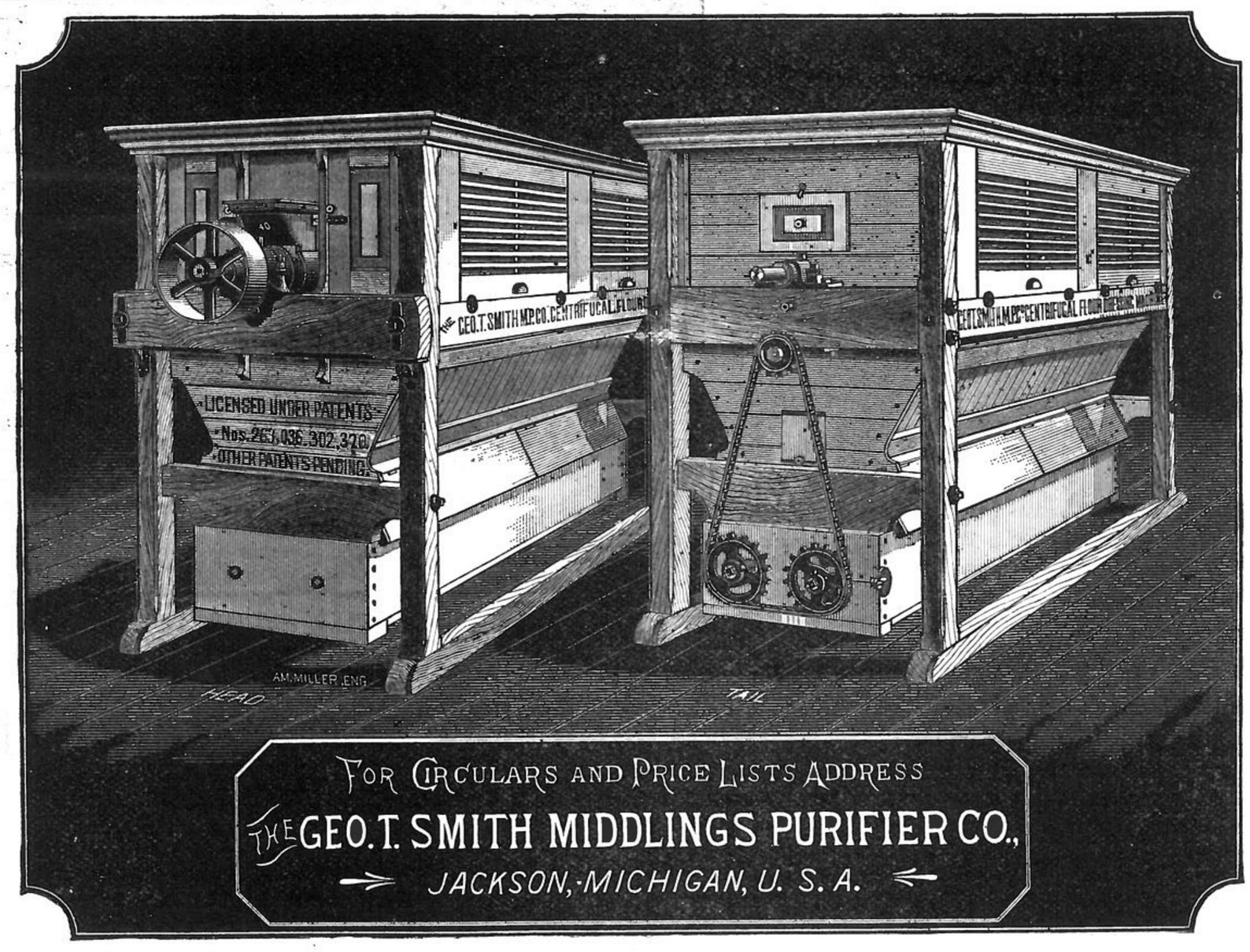

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THE ubiquity of chemistry and its close relation to the needs of humanity, is marvelous, says the *Independent Record*. There is nothing that enters into the average man's hourly existence that does not owe its form or its excellence, its desirability, its merit or its hue, to the cunning of the analytical or manufacturing chemist, the man who brings into practical life the hidden properties of the product of the earth, the air and the sea.

From the cradle to the grave, man is surrounded with the evidence of this. Skillfully prepared food, adapted, through chemical preparation, to the requirements of his baby stomach, tides his infantile life through its critical period. As he acquires years, he absorbs mental food from books whose pages owe their illustrations to the potency of chemical knowledge; whose covers would be still great trees of the forest, but for the knowledge which chemistry bestows, and which converts wood into pulp and pulp into paper stock. And in every familiar object the same potent hand can be seen. The homestead is lighted through panes of glass, that, but for the knowledge of the chemical properties of sand and of potash, would still be in the soil or the mine. The locomotive, the steel rail upon which it runs; the steamboat and its propelling power, could not be in existence today, had not man mastered the knowledge which enables him, in the chemist's laboratory to determine that such and such ingredients shall be tough iron; these shall unite to form steel; those shall be some other metal.

Chemistry endows wood with a life far surpassing that which it would reach if left to nature; and gives to frail fabrics a fire-defying quality. In fact, fire itself yields to the power of an innocent, demure looking chemical, enclosed in a glass bottle or hidden in the interior of an extinguisher.

And when poor human nature needs a physician, chemistry comes to man's relief. The uttermost corners of the globe and the depths of land and sea are made to contribute the curative elements they contain. Chemistry unlocks every mystery and evolves a remedy or a restorative from a metal brought from the bowels of the earth, as readily as from a fragile flower or plant, blooming in a neighboring field.

The knowledge given the world by the chemists of the past and the men of science and chemistry of to-day, underlies every field of industry and makes possible that which would otherwise be wholly, utterly, impossible. Chemistry is as potent as it is ubiquitous, and but for the men of the laboratory, the great inventions of the present century would never have been brought about.

CONSUMPTION OF COAL.

We are told that the aggregate production of coal in 1883 in Great Britain, the United States, Germany, France and Belgium was 371,000,000 tons in round figures. In 1882 the corresponding production was 356,000,000 tons; in 1881, 332,200,000 tons; in 1880, 315,100,000 tons; and in 1879, 285,600,000 tons. We thus arrive at the astonishing fact that the production of coal in the five countries increased in the four years ending with 1883 inclusive to the extent of 85,400,000 tons. The production of the United States is also marching on, having risen last year to 95,800,000 tons, as compared with 93,600,000 in 1882. We hear of the continued dullness of trade and the discouraging results of commercial enterprise; but in presence of the stupendous increase indicated in the production of coal by the figures which we have just cited, it cannot, we think, be fairly maintained that the coal-mining industry has been depressed during the past half decade. This remark holds good, at any rate, so far as the extraction is concerned, and the only question is whether the prices obtained have been fairly remunerative. Probably coal-owners have suffered from the growth of competition which has been a distinctive feature in all trades and pursuits during the last five or ten years. The main cause of the continual growth observable in the coal extraction of all the countries is, no doubt, the steady development of steam power and the increased domestic consumption resulting from the progress of population. The demand for household coal must have a tendency to grow as households are multiplied; but, after all, the main explanation of the continual expansion of the world's coal trade must be found in the steady development of the world's steam power. Every day more and more steam engines are brought into operation, more and more railways are established, and more and more steamers are built. Hence it comes about that more and more coal must be raised to feed the steam boilers of the world.

---

* * Recent researches by M. Maumene have shown that the metal manganese exists in wheat, rice, and a great variety of vegetables. Wheat contains from one five-thousandth to one fifteen-thousandth of its weight of the metal, which exists chiefly as a salt of an organic acid. It is also found in potatoes, beetroot, carrots, beans, peas, asparagus, apples, grapes, and so on. The leaves of the yong vine are very rich in it; so are the stones of apricots. The proportion in cacao is very great, as it is in coffee, tobacco, and especially tea. In the 50 grammes of ashes left by a kilogramme of tea, there was five grains of metallic manganese. There are vegetables, however, in which no manganese can be found, as, for example, lemons, oranges, onions, etc. Many medical plants contain it, as, for axample, cinchona, white mustard, and the lichen (*Rocella tinctoria*). Animal blood does not always contain it, but it is found in milk, bones, and even hair. M. Maumene regards its presence in the human body as an accident, and not of vital importance. He also suggests that doctors should cease to employ manganese as a succedaneum for iron, for while the latter is useful to the blood, the former is an intruder which is only tolerated in small traces, and rejected in larger quantities. Tea, coffee, and other vegetables require abundance of manganese in the soil for their proper cultivation, and the absence of it may account for the failure of many plantations.—*Sci. Am.*

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* * So long as the wheels of the machinery turn round at the appointed times it does not seem to occur to some manufacturers that they need give any thought to their boilers and steam engine, says the *Electrical Review*. In his earliest experiments Watt was surprised at the vast quantity of steam which a small engine used, and finally stopped it altogether, keeping up the steam pressure, and found that he could not see any difference in the consumption of steam, whether the engine was working or not. Of course, such leaks as the one cited do not often occur nowadays, but it is a fact that many tons of steam, and the coal to make it, leak through engines daily where no one suspects it. The greater first cost of a good engine, well fitted up, often prevents its purchase, but the coal bill would be enough reduced in a year to pay the extra cost. The value of careful tests of engines and of the conditions under which they work most economically cannot be over-estimated. At the coming International Electrical Exhibition, to be held at Philadelphia, September, 1884, it is proposed to make a most thorough series of tests for all engine builders who may make application for them.

---

* * Speaking about the prevention of boiler scale, a correspondent of the *American Machinist* relates his experience as follows: We have for some time past been using a vegetable substance called gambier, which, we understand, comes from the West Indies. It appears to act very well. It has loosened the scale which was in the boiler, and it appears to prevent the formation of new scale. It is a substance of a dull brick-red color, and has a consistency about like soft putty, unless exposed, when it hardens. It readily dissolves in water. We put a lump about the size of a walnut in the boiler before making fires, about once or twice a week. We have opened the boiler twice since using it, and have found very little scale on the surfaces, and but little loose scale in the legs of boiler. We have an upright tubular boiler, and carry about 55 lbs. pressure. We pay but ten cents per pound for this substance, and are inclined to think it acts well.

---

* * A committee was recently appointed by the Paris Academy of Sciences to investigate the claims of Claude, Marquis de Jouffroy, to having been the inventor of steamboats. The conclusion arrived at was that while Papin, according to the French tradition, conceived the idea of applying steam as a motive power to navigation, the practical application of that idea was first realized by Jouffroy. It was also alleged that in 1780 he built a boat 140 feet long by 14 feet wide which steamed up the river Saone at the rate of six miles an hour, which was called a pyroscaph. M. de Lesseps, chairman of the committee, proposes that a statue be erected to Jouffroy, but it is questionable whether in the multitude of claimants to the honor of the invention, the world will accept the Paris committee's decision as final.

---

* * The President of an insurance company said recently to a representative of The *Mechanical Engineer* that it was, perhaps, not generally understood by steam users that their insurances were vitiated by the employment of unlicensed engineers. If any accident occurred by which fires were caused, or the premises damaged so that the insurance people were held accountable for repairs, they were not liable unless a licensed engineer was in charge at the time. This clause, it is stated, is in all the policies of the particular company alluded to, but how it can apply, says the *Engineer*, in cities where there are no license laws it is difficult to see.

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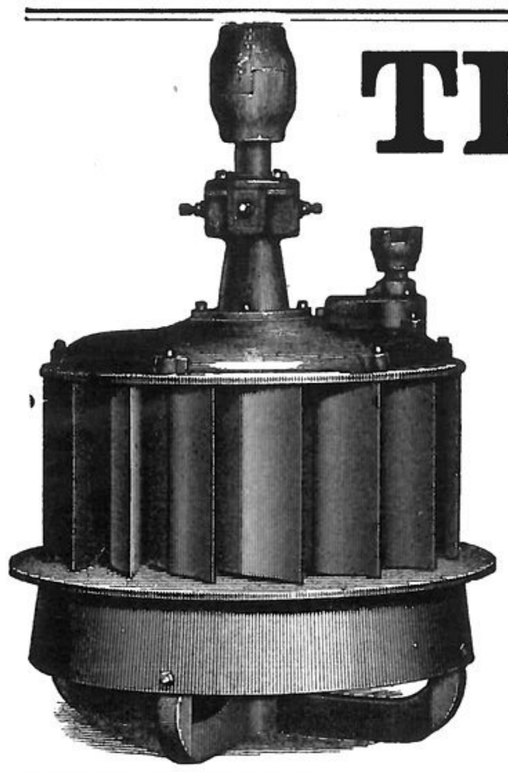
* * The water power at Columbus, Ga., is estimated at 37,500 horse power at the lowest stage of water. During nine months of the year the river is calculated to give 75,000 horse power.



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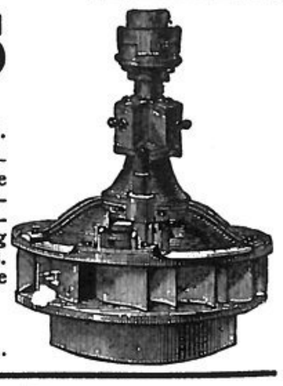

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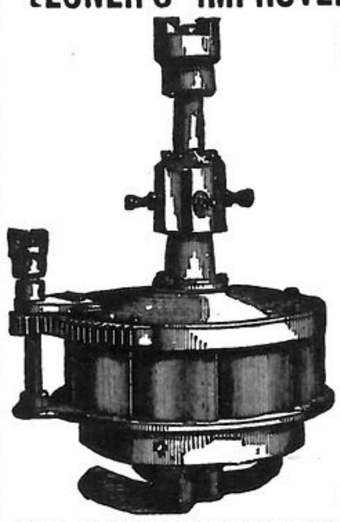

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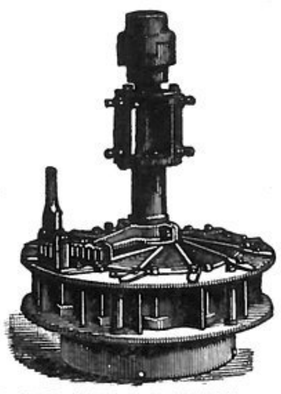

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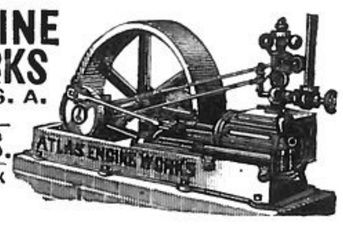

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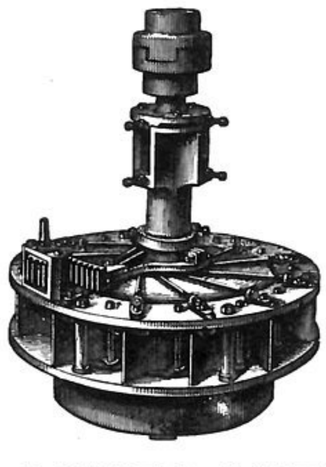

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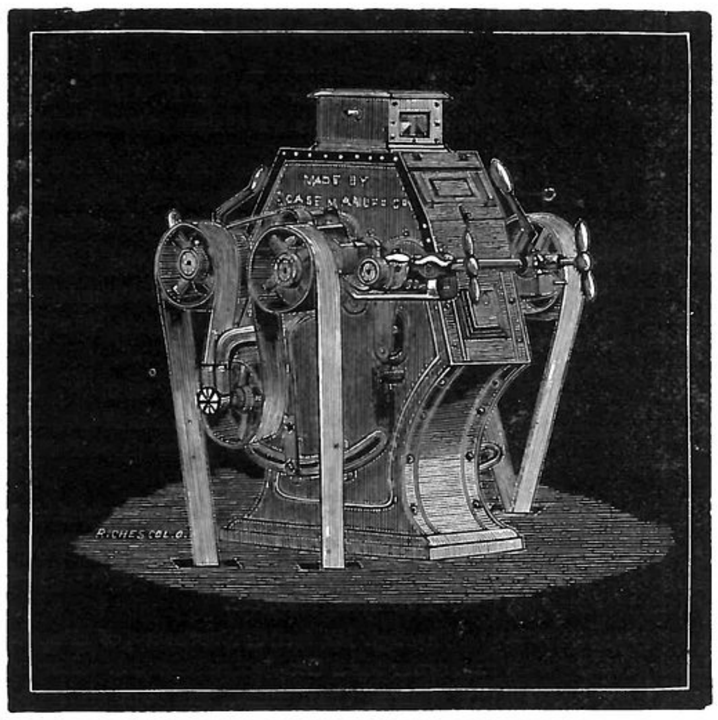

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The Milling World's Observatory

BUFFALO'S GRAIN TRADE.

The *Express* has a reporter who, calling at the office of Mr. U. J. Livingston, grain inspector of the Merchants' Exchange, found him sitting by his table, on which was a sample of new wheat that had been received from Kentucky. It was plain that the grain was very plump, but the inspector gave it even a better character than indicated by the above adjective, and said that it was "elegant" and would weigh sixty-two pounds to the bushel. From this starting point it was easy to proceed to the grain crop generally. New wheat began to arrive here about three weeks ago, though of course in very small lots. The shipments have increased steadily until it now comes from Ohio, Michigan, Illinois, and Missouri. Seven or eight car-loads arrived yesterday, and the amount sometimes reaches a dozen car-loads. Mr. Livingston speaks of it all as exceptionally fine, and thinks that the new crop will be much above the average in quality.

As to the general outlook, something that concerns every one very directly, the inspector predicts a much more satisfactory season before us than the one just past. For this opinion he finds abundant reason. The amount of corn in store is exceedingly small, only about 5,000,000 bushels. The American market alone demands from 30,000,000 to 32,000,000 bushels of corn a month. New corn will not begin to come in until late in October, so that we have three months before us in which corn must be mostly left out of the count and the uses to which it is regularly put be supplied by millfeed and other grains. The amount of wheat in store is also much less than usual at the opening of the season, so that in spite of the generally dull business a brisk movement of the new crop can hardly help following as a natural consequence of the general shortage. Mr. Livingston looks to see corn go to eighty cents before the season is over and a good improvement in the export demand. The trouble with the foreign trade this year is that the crop was largely held by speculators, who amused themselves by tossing it from one to another, and in order to keep themselves from loss kept the price higher than it would naturally have gone. The result is that a great many of these manipulators got badly bitten, for which fact Mr. Livingston appears to be reasonably grateful, and predicts that they will not be in a hurry to repeat the operation.

Coming down to Buffalo and his own business, the inspector is at the same time encouraged and somewhat out of patience, apparently. The attempt to set up a rigid grading system here that should be independent of up-lake standards and yet suit the local wants as well as they, has succeeded quite as well as was hoped. At present Mr. Livingston knows to a pound of all the grain received here both by lake and by rail, and with the exception of the receipts of two or three dealers he fixes the grades of all that is sold here. It has come now so that it is all referred directly to him. This cannot help simplifying the situation very much, and will go far toward making Buffalo a grain market in the sense that it has never had the courage to be in years past.

What Mr. Livingston complains of is that there is too much disposition to let the city remain a mere passing point for grain, instead of the distributing point it ought to be, and could easily be, if there were only some one here with sufficient nerve to make a decided move in that direction. He declares emphatically that Buffalo is naturally the finest grain distributing point after Chicago, but the local dealers are afraid to make a stand and fight for the position that really belongs to us. There is one thing that is especially in our favor. The elevators that line the harbor, now largely valueless because unused, could be brought into line as storehouses. At present they are used almost entirely as transfer houses—a cargo that comes in early in the day is often all spouted out into canal boats before night. To make this port a market in the proper sense of the word, Mr. Livingston thinks a stock of from 2,000,000 to 5,000,000 bushels of grain would be needed. With good sales this ought to be turned over two or three times a month. What is needed is the steady hand with courage and experience necessary to undertake this new departure and carry it through. Of one thing he is satisfied. If our own dealers fail to do this some one from outside will some day come here and do it for them. Buffalo is too good a field for such a venture to be always waiting for timid people to make up their minds. The question is whether local dealers are willing to see some one else grasp this opportunity that is waiting for them and rightfully belongs to them.

At present the nearest approach to a market, such as the inspector has in his mind, is a very uncertain one. Sales are largely made of grain still in the elevators at Detroit or Chicago, or on its way down. A country miller wishes a boat-load or a few car-loads of wheat. He applies to some Buffalo dealer for it, but before the dealer can give him a price he must telegraph up the lake and see what he can buy it for. This preliminary arranged, he is in shape to sell. The result is that Buffalo is perpetually and hourly dependent on Chicago, and the consumer pays direct tribute to both before he can get his grain. Buffalo has now become too rich and central for this hand-to-mouth sort of thing. The man or set of men who develop push and ability enough to establish the much-desired new order of things will set Buffalo directly in the way to become in the grain market what she is undisputedly in the coal market, the great distributing center. Shall this move be made at home, or are we going to wait for some one else to do it for us?

On another point bearing more or less directly on this subject Mr. Livingston is quite decided, though there are doubtless those who will hardly agree with him. He favors the Call Board and dealing in futures, claiming that in spite of the admitted manipulation and gambling often connected with this branch of the business it greatly increases the actual business done. There are always people who buy options; Buffalo is full of them now, but instead of transacting the business here and letting the city have the benefit of it, a great part is done by telegraph and some other city gets the benefit. This, however, is a small matter as compared with the main question at issue and need not be considered at length now.

Notes from the Mills.

Iowa expects 300,000,000 bushels of corn and 35,000,000 bushels of wheat.

The foundations of the new 800,000 bushel elevator E at Duluth, Minn., are completed.

The flouring mill at Ettrick, in Trempealeau county, Minn., is being rebuilt into a roller process mill.

The grist mill and store of Crisman & Son. flour and feed dealers, Berwick, Pa., has been closed by the sheriff.

There remained on July 31 about 640,000 bu. of wheat in the Duluth elevators, to move before the new crop arrives.

Farmers' elevators are under construction at Argyle and Stephens on the Manitoba road. That at Angus is completed.

Not an ear of corn, blade of wheat or stalk of sugar cane has been left by the grasshoppers at Taltizapam, State of Morelos.

Hutnut & Co., Pekin, Ill., have placed their order for a Gray's noiseless belt roller mill with E. P. Allis & Co., Milwaukee, Wis.

H. Gingerich, Erie, Pa., has ordered from S. Morgan Smith, York, Pa., his improved Success water wheel, for use in his grist mill.

Meyer, Luebbert & Co., Holland, Md., have placed their order with E. P. Allis & Co., Milwaukee, Wis., for a noiseless belt roller mill.

One Gray's noiseless belt roller mill, for the mill of M. Soplin, Longwood, Mo., has been ordered of E. P. Allis & Co., Milwaukee, Wis.

E. P. Allis & Co., Milwaukee, Wis., will furnish four pairs of Allis rolls in Gray's noiseless belt frames, for McMillan & Martin's, West Salem, Wis.

The Acme Milling Co., Olean, N. Y., has placed an order with E. P. Allis & Co., Milwaukee, Wis., for two pairs porcelain rolls in Gray's noiseless belt frames.

South Carolina has 1,568 flour, grist and rice mills, employing 4,379 whites and blacks, using a capital of $2,755,750, and turning out $5,288,600 worth of flour, feed, etc.

Through Millford & Northway, of Minneapolis, an order for a Gray's noiseless belt roller mill for S. Nelson, Vasa, Minn., has been given to E. P. Allis & Co., Milwaukee, Wis.

Farmers throughout Andrian County, Mo., are complaining of the damage done by late rains to the harvested oats crop, which materially lessens the otherwise abundance, they say.

S. A. Whipple, South Shaftsbury, Vt., has placed his order with S. Morgan Smith, York, Pa., for a Success water wheel, and a lot of machinery for the improvement of his mill.

Near Blackstock, Chester county, S. C., July 26, the large corn and flour mills of A. B. Douglas were burned. The loss is estimated at about $3,000. The fire was probably accidental.

W. S. Rogers, South Boston, Va., has placed his order with S. Morgan Smith, York, Pa., for a very large Success water wheel, and a lot of other machinery for remodeling his mills on the Dan river.

Benj. Charles, Clear Springs, Md., has placed an order with E. P. Allis & Co., Milwaukee, Wis., for a No. 2 four-break reduction machine, and four pairs Allis rolls in Gray's noiseless belt frames.

Oliver Oliver, Seaford, Del., is putting up a new grist mill with the most improved machinery for flour making, and has placed his order with S. Morgan Smith, York, Pa., for all the iron machinery.

George K. Ensor, Belfast, Md., is putting in an improved Success water wheel, and a large lot of first-class machinery, making his mill virtually new. All manufactured by S. Morgan Smith York, Pa.

John Hipps & Sons, Clearfield, Pa., are improving their mills, and have placed their order for a large No. 2 Success water wheel, and all other necessary machinery, with S. Morgan Smith, York, Pa.

J. J. Lowery, Cook's Mills, Pa., is putting in a Success water wheel in place of an overshot wheel, and remodeling his mill. The wheel and machinery are being furnlshed by S. Morgan Smith, of York, Pa.

During ten calendar years ending with 1883, the lowest price of wheat in the Chicago market occurred in August but once; in September once; in October twice; in December twice; in February once; in July once.

Sharp Bros., Statesville, N. C., have received from S. Morgan Smith, York, Pa., a lot of shafting, pulleys, gearing, and a 27-inch No. 2 Success water wheel, for a new mill. This is the third Success wheel purchased by this firm.

Richard P. Bryant, Ivanhoe, Va., is putting up a new grist and circular saw mill, and will use a large Success water wheel to drive both mills. Saw mill and full machinery for the grist mill, as well as wheel, have been furnished by S. Morgan Smith, York, Pa.

The cyclone on July 29 in Dakota was followed by severe thunder, rain and hail storms, which, it is feared, worked very serious damage to crops in parts of Minnesota and Wisconsin. It is estimated that 15 per cent of the grain about Fergus Falls was destroyed by hail.

Stanton, Stoner & Co., Painterville, Pa., have ordered ten pairs Allis rolls in Gray's noiseless belt frames, also bolting and scalping chests, and machinery necessary to remodel their mill to the roller system. E. P. Allis & Co., Milwaukee, Wis., have the contract.

W. T. Cox, Pikesville, Baltimore county, Md., has placed his order with S. Morgan Smith, York, Pa., for machinery for a first-class saw mill, including a 27-inch No. 2 Success water wheel, also a 36-inch No. 1 Success water wheel and some gearing for his grist mill.

E. P. Allis & Co., Milwaukee, Wis., have received an order through Wolf & Hamaker, Allentown, Pa., for ten pairs Allis rolls in Gray's noiseless belt frames, for J. H. Snyder, Hanover, Pa.; eight pair porcelain rolls in Gray's noiseless belt roller frames, for E. K. Fried & Co., North Wales, Pa.

It is estimated that the wheat yield of Minnesota for this year will exceed that of last year by 4,110,000 bushels, an increase of 10 per cent; the corn crop will yield from 20,000,000 to 25,000,000 bushels; the barley crop will produce 7,000,000 bushels, the largest ever known in the State; and the oats crop will be about 35,600,000 bushels, 10 per cent. more than the crop of 1883.

Ashley & Batley's mill at Fort Plain, N. Y., burned last week, was insured for $10,000. Of this insurance $4,000 would have expired the day after the fire. Mr. W. J. Swinburne of Paterson, N. J., is the agent through whom the insurance was effected, and he telephoned to ascertain if they desired the policies renewed; the answer was that the factory has been burned the night before.

The Case Mfg. Co., Columbus, O., inform us that they will have a full line of their machinery on exhibition at the approaching Exposition at Louisville, Ky., and also at the great World's Exhibition at New Orleans. In sending us this item they take occasion to inform us that their trade was never better than at this time, that they are running full blast and turning out lots of goods.

The American Grinding Mill Company, makers of grinding mills, Chicago, Ill., have been closed by the Sheriff on a confessed judgment for $842. The company was incorporated in 1877, with $100,000 capital, represented by the grinding mill patent. The working capital was furnished by the stockholders, who were credited on the books with the sums so loaned. Up to a year ago they were said to have done a good business.

A dispatch from Paxton, Ill., dated August 3, says: "The prospects for farmers in this county are now very encouraging. The heavy rains ceased several days ago, and we are now enjoying fine harvest weather. The hay and oats are being rapidly gathered in. Flax and hemp are doing finely, and will make a splendid crop. Corn is in the best condition it has been for years, especially on good tilled land, where it was never much better."

Calling the wheat crop of 1884 for the United States 500,000,000 bushels, the domestic requirements for the next twelve months 320,000,000 bushels, including food and seeding purposes, there will be a remainder of 180,000,000 bushels surplus, for export and addition to reserves, which are now exceptionally low. This does not mean so great a quantity for export as has been disposed of within a year in this manner, and at prices materially higher than are now current, and generally regarded probable on this crop.

The returns received by the State Board of Agriculture show that the average wheat yield of Kansas this season is over 22 bushels to the acre, that there are 2,147,588 acres devoted to winter wheat, and that the aggregate yield of the wheat harvest in the State will approximate 46,000,000 bushels, which is 9,000,000 more than were raised last year. The State also shows an increase in the area in oats of 15 per cent. over the acreage of 1883, in the area in flax of 14 per cent. and a very large increase in the area planted in sorghum cane.

The annual exports of wheat, including flour, first exceeded 100,000,000 bushels during the year ended June 30, 1879, when they were 149,500,000, compared with 93,400,000 the preceding year, then the largest. In 1879-80 they increased to 180,900,600, in 1880-81 to 186,500,000, then decreased in 1881-82 to 121,600,000, and in 1882-83 rose to 148,800,000. The past year, with the diminished requirements of the British markets and lessened surplus, the exports were reduced to 110,000,000 bushels. Our surplus the coming year will not go begging at values lower than now current.

There is now no doubt that this years crop in California will be the largest ever gathered in the State. The total acreage is in the neighborhood of three and a quarter millions, the crop a little over seven millions of centals, nearly 62,000,000 of bushels, or 1,859,400 short tons, leaving a possible surplus of a million and a half tons. Of the yield the surplus suited for shipment is very much affected by the quality of the wheat, but this year it happens to be exceptional good, and will bring, for a year like this, a very good price. Harvesting is not yet through, and all conclusions are liable to be modified by results in the harvest field. Should our estimates prove correct, it would need 750 vessels of an average carrying capacity of 40,000 centals, or 2,000 short tons each, to carry the crop to market, or, allowing for steamer, etc., shipment of a million barrels of flour, 675 vessels.

The exports of breadstuffs for June amounted in round numbers to $10,900,000, as against $11,500,000 for last year. They reached $155,000,000 for the fiscal year 1884, as against $203,000,000 for the fiscal year 1883—a falling off of $48,000,000. This was owing chiefly to the decline in wheat exports, which amounted to $118,000,000 in 1883 and only $72,000,000 in 1884. While the value of exports of breadstuffs shipped from New York, Philadelphia, Baltimore and Boston during the fiscal year 1884 declined largely, the value of breadstuffs exports from Boston increased in amount, as is shown by the following table, giving the value for the ports named by millions for both fiscal years:

	1884.	1883.
New York	$60	$83
Philadelphia	8	13
Baltimore	23	32
San Francisco	25	31
Boston	17	15

A great drouth has been reported from all parts of the state of Ohio during the past week. At Mount Gilead forest fires are the order of the day. At Newcome station the drouth has been protracted with no signs of abatement. Meadows and pastures are brown and crisp, corn and oats are greatly damaged. Near Bolivar there has been no rain for over eight weeks, and the corn, oats and potatoes will be a total failure. In Guernsey county the sheep are starving, and the farmers have to feed them and drive them a long distance for water. Nearly all the corn in the fertile Wills creek bottom, is suffering greatly. The drouth extends along the Pan Handle railroad over much territory. In Stark county the same story is related. A fire was discovered in an oat field near Canton yesterday, and farmers were fighting fire all one night. Twenty-five acres of swamp and timber land near Myers lake was burning. At Wellsville the fires created great destruction in the Cedar Hill pine woods and in other forests. Drouth also prevails in Indiana and Kentucky.

FROM Foreign Lands

FOREIGN WHEAT HARVESTS.

BOTH in acreable yield and quality, there now appears to be a fair prospect that the wheat crops of the United Kingdom and France will this season show some improvement over those of last year, according to the reports of the New York *Produce Exchange Reporter*. In the United Kingdom, the area under cultivation is also somewhat larger this year than last, when owing to an exceeding unfavorable seeding time it was reduced 448,731 acres from that of the preceding year. But there was little incentive to materially increase the sowings for this seasons crop, and if the acreage be placed at 2,800,000 as against 2,707,950 last year it would probably be going high enough. A yield on this area of 3½ quarters per acre, would give an outturn of 9,800,000 quarters. Deducting from this quantity, say, 1,000,000 quarters for seed and tail grain—875,000 and 125,000 respectively—would leave 8,800,000 quarters for bread, and putting the requirements for this purpose at 5½ bushels per capita per annum, or, 25,000,000 quarters, indicates a deficiency to be supplied from abroad during the coming harvest year of some 16,200,000 quarters. It is not probable that the United Kingdom will carry over more than an ordinary supply of old wheat at the approaching harvest, as against exceptionally large stocks brought forward last year. France, also, will bring forward considerably less old stock than she did last season, hence that country, as well as the United Kingdom, may be expected to import quite as largely of foreign wheat in 1884-85 as in 1883-84. Of rye, France is expected to have rather a short yield.

In Germany, wheat and rye are reported as looking very promising, with but few exceptions. Stocks of wheat and rye in that country, however, were becoming greatly reduced, and this remark applies equally well to nearly all Continental countries. The cereal harvest prospects in Belgium and Holland may be characterized as fairly good. In Italy, the wheat and rye harvest was in full swing at last mail dates, with fine weather and the promise of satisfactory results. With regard to the crops of Spain, Portugal and Algeria, there have been no adverse reports of any importance, and it may be assumed, therefore, that the yields will prove at least fairly good. In Austria-Hungary, the crops are said to have considerably improved in appearance lately, owing to the better weather, and an average quantity of produce was anticipated. As is usual at this period of the season, reports in regard to the prospects in Russia are variable, some good, some poor and others mediocre, and it is of little use to speculate at present as to the final result. Taking the accounts altogether, however, a fair average of wheat and rye would seem to be tolerably well assured. Of wheat Egypt is said to have had a good crop.

As is now pretty well understood, the last Australian crop was greatly over-estimated at harvest time as is almost invariably the case every year, the average yield being now officially returned at 7 bushels of 56 pounds each, instead of 12 bushels as was commonly estimated at and about the time of the ingathering. New Zealand has a good crop in quantity, but the larger portion of it was more or less damaged by rain, much of it very badly so. Chili turned out a fair crop, and British India the same.

Taken together, the wheat crops of the earth already harvested, with those soon to be gathered, furnish every assurance of abundance.

MORE ABOUT INDIAN WHEAT.

The *Pall Mall Gazette*, commenting upon the recent report of the Committee on Indian railways, declares that the time is slowly but certainly approaching when India will become the granary of England. The *Gazette* does not share the hopes of the optimists of Indian economies in regard to the future development of India as a source of wheat supply, but it declares that after all proper deductions have been made the fact remains that Indian wheat can already be raised and brought to England at a cost below that of the cultivation and carriage of the American crop, and that, though the supply is still limited, it is fast increasing even under present conditions, and with any considerable development in the means of transport in India it will increase much faster still. Such a development, says the London journal, is now not only contemplated but assured. "Upwards of £30,000,000 are to be advanced or guaranteed by the government in making new lines or improving old ones, while a not much smaller sum will, it is anticipated, be expended by private enterprise on lines of a more certainly and directly productive character. In any case the construction of something like 4,000 additional miles of railroad is placed in immediate prospect. And these are grain lines. Their primary object may be to make the vast granaries of one part of India available at a pinch for the supply of other and less favored districts of the peninsula. But in the long run this business of railway extension, which is now to receive so powerful an impulse, will have an even more important effect in stimulating the export of Indian grain to Europe than in facilitating its distribution in India itself." The *Gazette* adds that the new development of India's resources must exercise a powerful influence upon the whole foreign policy of England.

NOTES.

Domestic postage in Mexico is higher than foreign, and there is not a postal card in the country.

It is reported from Dublin that boycotting notices have appeared in Skibbereen against the introduction of labor-saving machines.

Millers in the south-west of France complain of the inferior bread-making qualities of the American wheat recently delivered there, but on the other hand consider this year's Australian wheat very satisfactory.

An Austrian commission appointed to superintend theaters has decreed that in future every house of entertainment is to be entirely detached on all four sides, and to be fifty feet from any other building.

The Madrid correspondent of the *Standard* says: "The negotiations between Spain and America relative to a new commercial treaty are now at a standstill. The pretensions of America clash with Spanish interests in Cuba. Spain is reluctant about allowing close commercial connection between her colonies in the West Indies and America. The latter is already taking 80 percentage of the exports from Cuba."

Late telegraphic advices from Mexico state that the government "is adopting stamp-tax reforms," which are acceptable to the commercial houses, and by which wholesale dealers are to pay one-half of 1 per cent. on their sales, while retailers are to pay yearly, according to the extent of their business. The National Bank is said to be "regularly collecting personal taxes for making good the deficit in the government budget, and creating a sinking fund for the payment of the public debt'"

Bradstreet's recently presented a comprehensive debt statement of the Australasian colonies which showed them to be the most heavily burdened communities on the earth's surface having any pretence to solvency. But since that time they have gone on piling up millions of additional debt, all hope of ever paying the principal having been abandoned. On the 6th of May last the little insular colony of Tasmania asked for £800,000 at £98, and was tendered £2,250,000, getting the amount of its loan at something in excess of £100 4s.

From carefully compiled official statistics on the harvest prospects throughout the Monarchy of Prussia, it appears that more than average returns are expected this year. In the province of East Prussia, the state of all the crops must be at present described as an unusually good one. In West Prussia the condition is not quite so hopeful, owing to the April rains: in Brandenburg the warm weather of April and May has produced better crops than for many years past. The crops in Pomerania are satisfactory, and even very plentiful; in Posen their state is on the whole good; in Silesia the fields almost everywhere present a gratifying appearance; in the province of Saxony the prospects of a good harvest are thoroughly favorable; in Schleswig-Holstein the state of all cereals is satisfactory; in Hanover it is on the whole good; in Westphalia generally excellent. In the Rhine province the summer growth of almost all the crops justifies the high hopes of spring.

The farmers of the Argentine Republic, have planted immense fields of linseed this season, but the cultivation of wheat, especially in the distant districts, has been much neglected, in view of the unsatisfactory prices paid for that cereal. The current of immigration continues strong, but the influx is far from sufficient, and the demands of the labor market were never so urgent as at present. In the Buenos Ayres City Improvement Department alone about 5,000 Italians are employed. The Minister of Finance is busily engaged drawing up the budget for 1885, which it is expected, will be heavier than that for the current year; but the revenue is increasing steadily, and not only the Custom House, but the railways and others public works, are making far higher returns than expected.

A bill to regulate the working of telephones has been laid before the French Chamber of Deputies, of which the following is an abstract: "Article 1. The working of telephone lines conceded to private enterprise by the Minister of Posts and Telegraphs cannot be authorized for a longer period than five years, and under conditions fixed by a specification. This specification should stipulate, for the state's profit, for a tax of 10 per cent. at least on the receipts. Article 2. These lines shall be worked either as permanent installations at the house of individuals, or as public exchanges. Article 3. The Minister of Posts and Telegraphs shall fix the tax to be paid for communications by means of public exchanges under the conditions of the law of April 5, 1878. He shall also fix, under the same conditions, the taxes for telephonic communications that the state might establish between towns." The bill is an extension of that decreed June 26, 1879, which limited the concession of the right to erect and work telephone lines to five years, and reserved a tax of 10 per cent. on the gross receipts for the state. This tax in 1879 brought 2,424 francs into the treasury; in 1880, 15,616; in 1881, 55,290; in 1882, 142,637, and in 1883, 217,450, while for the first quarter of 1884 it amounted to 63,353 francs, and the second quarter is estimated to show a receipt of about 70,000 francs. The concessions made in 1879 expire on September 8 next.

Writing in *Dornbush's List*, a correspondent states that whatever ordinary results may be proved in respect to the British wheat harvest, even if repeated rainfall may do further damage, and influence opinion in country districts, the importer and wheat merchant, having to deal with the crops of the world, has to put aside the attractive view that the main situation of the market is materially changed by recent weather. The temperature keeps high, and corn goes on maturing favorably in many instances; nor is it at present probable that the English, still less the European, wheat crop will be a short one. Only an average quantity of imported wheat is likely to be wanted, and that quantity may be easily estimated. On the other side, there is an undisputed probability of the export surplus of those countries which ship wheat to England, France, Belgium and Holland, being above the quantity grown a year ago. This single point is therefore the main point, the influential factor of the market, and should be kept persistently in view. Even by iteration this argument must be maintained: 1. Consuming countries are likely to require but an average supply, and 2. Surplus producing countries are likely to have more than an average supply. Is this then a position and period, when relatively unimportant effects are produced by unsettled weather, to look for a permanent and healthy improvement in prices? The campaign just ending has left value at an exceedingly low point, and the market has got accustomed to low currencies. If from *unreason* they have descended, yet the task to raise them is a most difficult one, however reasonable. In past times value has often mounted easily and rapidly, but then the lever that raised value was the fear of scarcity, however temporary. At present it is scarcely possible to raise in the mind of the market the fear of scarcity, when the new crop of America promises in itself to be a sufficient supply for this country. Diminished stocks speak in so low a voice of warning that it scarcely makes itself heard, whilst the westerly winds are blowing fresh cargoes of wheat into our ports of call, and when harvest has begun in France, and should be general in England in twenty days. There is one view that may always be kept before the market: the extreme lowness of the price of wheat, which is such that whenever weather or other influences may re-establish opinion on a healthy basis, any advance by slow degrees will always be reasonable.

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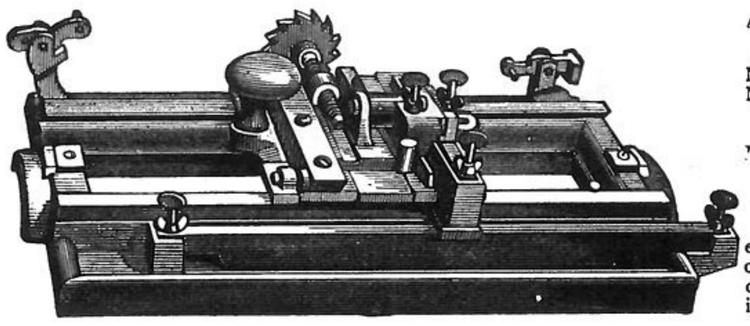

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No 1, to face and crack	$25.00
No. 2, to face, crack, dress furrows, and will dress any size stone	45.00
No. 3, to face, crack and dress furrows.....	40.00

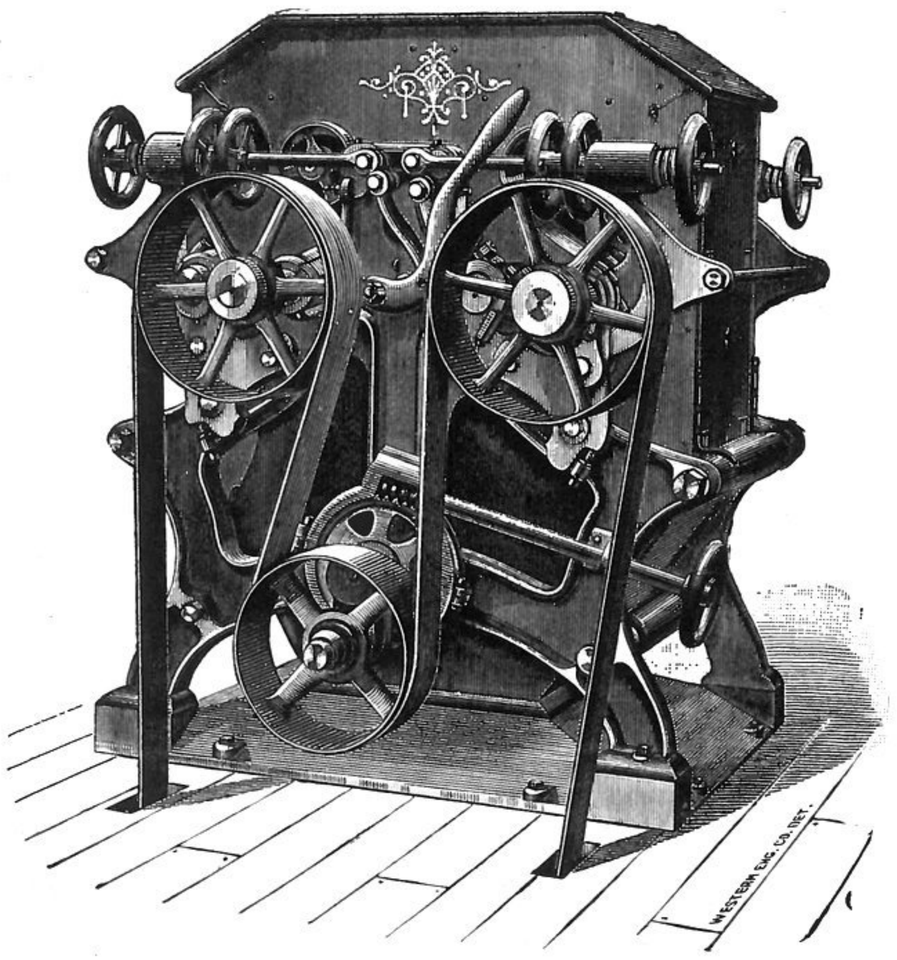
Will do as good work, and is more easily adjusted than any other machine. Sent on 30 days' trial. Address for circulars, containing full information.

C. S. HOOVER, Patentee and Manufacturer, 409 East King St., *LANCASTER, PENN.*

PORTABLE FORGES

Empire Portable Forge Co.
Cohoes, N. Y.
Send for Catalogue.

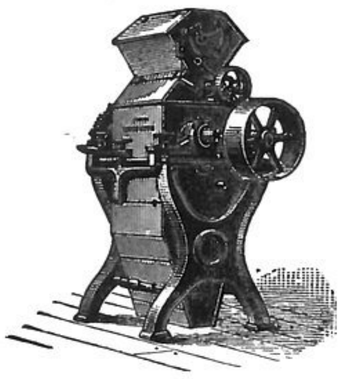
The MILLER ROLLER MILL



Has no superior. Universal Tightener, Automatic Feed, Tight Base, Noiseless, with Non-Cutting Corrugations. We also manufacture the Rider Wheat Break, which has no equal for 1st, 2d and 3d Breaks. Send for Reference and Circulars of our Machines,

THE MILLER CO., CANTON, O.

GREAT TRIUMPH IN INVENTION



The Simplicity so long sought after in Roller Mills attained at last.

ONE, TWO, OR FOUR BREAKS IN A SINGLE FRAME

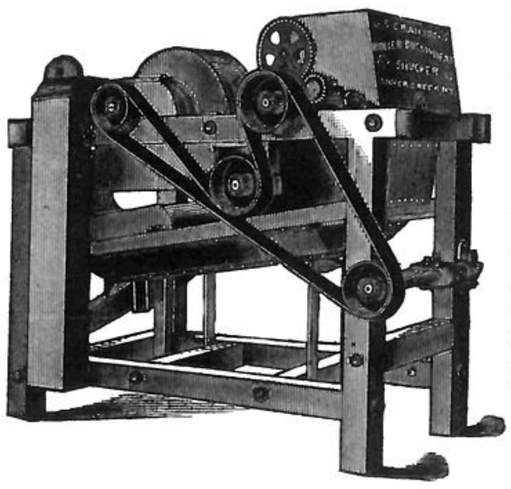
SIZES OF ROLLS 9x18 and 7x14 INCHES.

NO CROSS BELTS. NO FRICTION. NO LOSS OF POWER.

Reduction Rolls, Bolting Cloth, Purifiers, Middlings Mills and Bolting Chests. General Mill Furnishing Supplies.

W. H. BARBER & CO., SOLE MANUFACTURERS, ALLENTOWN PA.

BUCKWHEAT MILLERS



WILL FIND IT TO THEIR DECIDED ADVANTAGE TO INVESTIGATE THE CONCEDED MERITS OF

CRANSON'S SILVER CREEK

ROLLER BUCKWHEAT SHUCKER

ITS SUCCESS IS BEYOND QUESTION. ITS VALUE HAS BEEN DEMONSTRATED IN MORE THAN ***800*** CASES. IT IS THE ONLY PERFECT BUCKWHEAT SHUCKER IN THE WORLD.

G. S. CRANSON & SON, SOLE PROPRIETORS SILVER CREEK, N. Y.

HEAD LININGS AND COILED BARREL HOOPS.

Our Celebrated Patent Head Linings are straight Rounded on their upper edge nail on barrel. They will freely through the square are packed. We can furnish from twelve to seventy-two GOOD Head Lining can

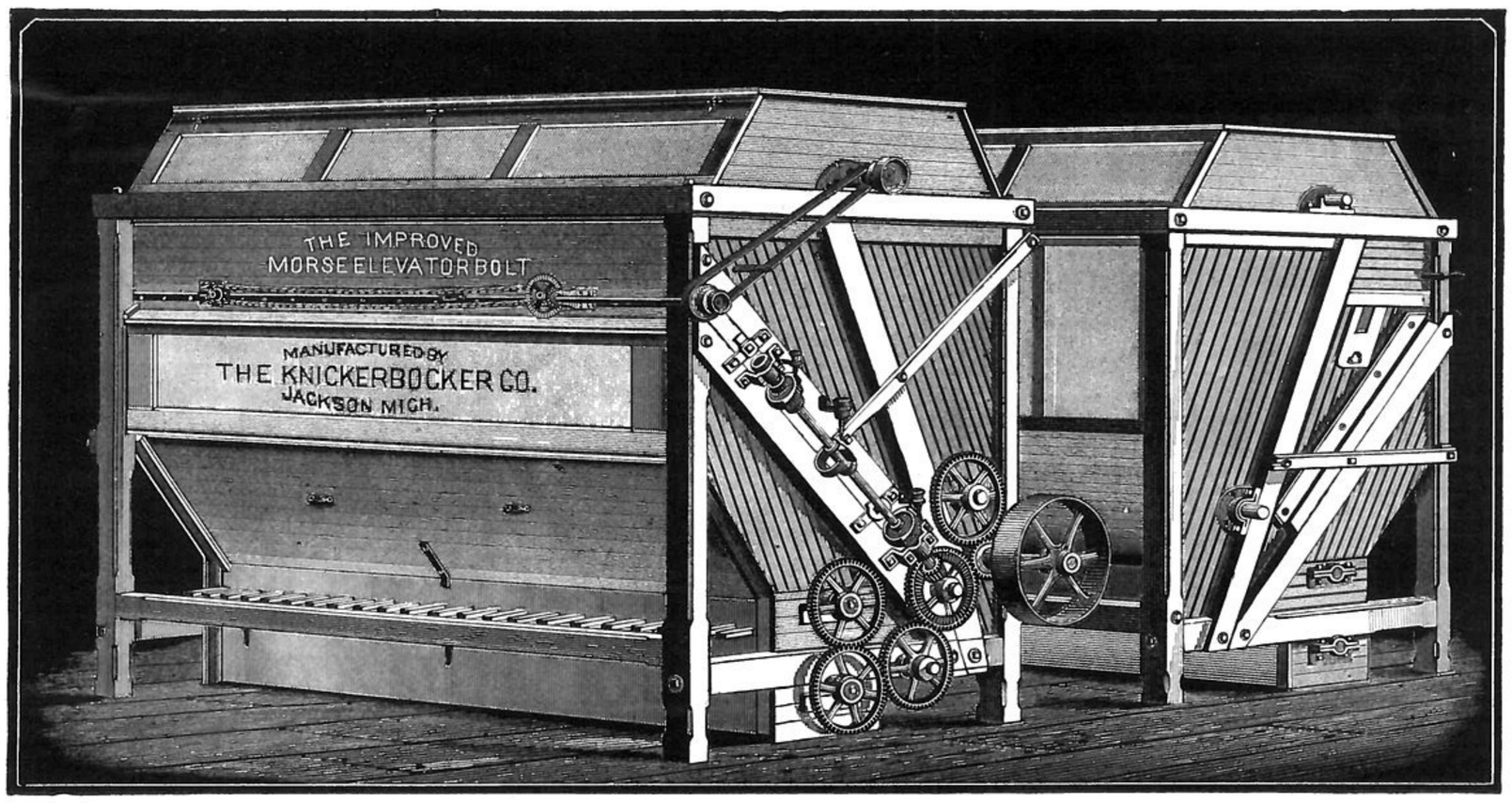
Round Edge Bent Barrel grained from end to end, and crimped or bent ready to not mold, as the air circulates bundles of 250 in which they them any desired length, inches, and as cheap as any be sold.

CAN FILL ALL ORDERS AT SIGHT.

REED & SILL COOPERAGE CO.,

DETROIT, MICHIGAN.

The Improved Morse Elevator Bolt.



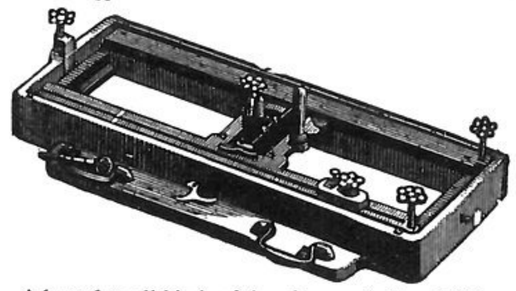
DEMONSTRATED IN OVER 100 MILLS TO BE THE BEST BOLTING DEVICE KNOWN.

THE KNICKERBOCKER CO., JACKSON, MICH.

AUTOMATIC ROD FEED!

A NEW INVENTION.

NO EQUAL IN MANY RESPECTS.



Adapted to all kinds of dressing on right or left hand burrs; convenient to place machine over spindles, are ample long and wide. All adjustments and regulations are quick and easily made without the use of any tool. By the use of this rod feed deeper facings can be done by once going over the face, as the feed can be set to over 1,000 cuts per inch, and is instantly regulated as desired, to suit the depth of cut, in other words to cut fine or coarse when in motion, making it complete, and a great saving of time in this respect, as well as others. For ease of operation and adjustment it is far superior, also for merit and simplicity. All is fully guaranteed to be as represented. Machines have now been in use for four years, and not a single call has been made for any repairs. Also a new Improved Patent Diamond Holder, which is specially adapted to hold any shaped diamond; convenient to set a diamond. Facing can be done to good advantage with two diamonds at one time. The carriage can be taken out at end of machine and replaced in a half moment's time, all is complete. A revolution in several respects. Machines will be forwarded on their own merit, by parties giving good references. Send for circulars giving full description.

C. A. BERTSCH,

Sole Manufacturer, Cambridge City, Ind.

The Grain and Flour Trade

Office of THE MILLING WORLD.
Buffalo, N. Y., August 6, 1884.

During the major portion of last week, says *Bradstreet's*, there has been an interesting difference of views as to wheat between New York and Chicago. At the latter city the crowd has been inclined to advance prices, while at New York the feeling has been decidedly bearish. The mixed character of the weather reports from the United Kingdom inclined to favor the bullish opinions held at the west, but the reversal of the visible supply reports and heavy arrivals of grain at seaboard and at interior points of accumulation served to eliminate any apparent elements of strength beyond that to be found in the good quality of the new grain. The visible supply as reported at Chicago showed a slight decline, but the report furnished last Wednesday from New York indicated an increase of 1,020,856 bushels, the total being 12,760,444 bushels. This was to be expected after the rather free deliveries by farmers of late, and the sales of grain for export. Owing to the latter rates had previously advanced and tonnage had become scarce. Arrivals of vessels will soon ease the situation, and considerable grain has already been engaged for August and September shipment. The increased quantity of wheat at New York is 23,588 bushels, and at Chicago it is 513,661 bushels. On Thursday lower cables and renewed favoring weather reports at home depressed prices. On Friday the selling predominated, and another drop of ½@1c. was the result.

Stocks of Indian corn at New York have increased 11,796 bushels on the week, but at Chicago they have fallen away 316,995 bushels. The firmness of Indian corn has been due to a rather better demand for the cash variety and to declining western stocks. Speculation in this cereal has not been very active. Improved weather throughout the heavy corn-growing regions weakened prices slightly later in the week. There has as yet been no apparent attempts at serious manipulation of prices of this cereal, based on the relatively small stocks and the distance of the new crop. Indian corn, in sympathy with wheat, has declined during the past few days. The posting of some here as out of condition helped the depression.

Oats have fluctuated in price more in proportion, and in the July option there has been some attempts at controlling figures. Notwithstanding the decrease in the visible supply, the excellent oat crop prospects and the beginning of harvesting served to hold prices down and to weaken the market somewhat. Wheat flour is steady for old winter grades. The new flour is of excellent quality, but is arriving so freely that prices are inclined to go off. There is a rather better trade in flour, however, but arrivals are so steady that the new impulse is being discounted already. The advantage is yet with buyers, and stocks at tidewater are increasing.

At Philadelphia there has been a good export demand for wheat until Thursday, when a good many orders were withdrawn on account of declining foreign markets and reports of clearing weather and a better crop outlook in England. Considerable business has been done, but a good many orders have been unfilled on account of the scarcity of vessels for immediate shipment and the unwillingness of sellers to make contracts for future clearance on the basis of current option prices. Speculation has been moderately active. Oats have been active and have advanced 2 @ 3 c., owing to local scarcity. One or two cars of new crop have already arrived. Corn has been strong and in good demand for consumption, but there has been no speculation and nothing doing for export. Flour has ruled dull at steady prices. A special to *Bradstreet's* from Chicago says: "Deliveries on the Board of Trade are very small. The limited supply of wheat is in strong hands, and there is plenty of money for carrying, 5 per cent. cash. Wheat has advanced. Corn is steady." At St. Louis new wheat receipts are increasing slowly; a special to *Bradstreet's* says: "All grains have been nervous and unsettled, and at times quite active, with the general tendency to weakness. Flour is dull and weak, and most sales are of new." Milwaukee advices state that the wheat movement is decreasing rapidly, owing to harvesting, the daily average being a little more than 20,000 bushels. Rye has been secured in good shape. The winter wheat harvest is about over. Barley cutting is progressing, but is checked by the severe rainstorms in many localities. In southern Wisconsin the crop has been secured in good order. In the northern part it is not yet ripe, and consequently not damaged. In the central part many fields have been badly discolored. Wisconsin's barley crop will be uneven. Spring wheat is ripening rapidly and promising a large yield, though heavy rains damaged many fields. Receipts of flour are liberal, averaging 16,000 barrels daily. Production here has fallen off largely, being 3,700 barrels daily. Millers generally are shutting down for repairs, and next week the figures will be smaller. In California new wheat is coming forward liberally, with improving demand.

BUFFALO WHEAT MARKET.

Buffalo, Aug. 5, 1884.

There has been a good milling demand for wheat during the past wheat, and prices remained steady until Friday and Saturday, when the market broke all round. Choice lot of 16,000 bus. No. 1 hard sold Friday at $1.02, held firm fore part of week at $1.06: Saturday No. 1 hard sold at $1.00. New wheat is arriving freely by lake from Toledo and Detroit, and is shipped by canal in large quantities to New York. Samples of very good long berry offered on track at 96c. No. 2 red offered at 94c. Very little old red here. Some lots of No. 2 held at 97c, and new white wheat held at 96@98c. No. 1 hard Duluth held at $1.00, and No. 1 regular at 95c. Stock very light here at present, but our millers do not anticipate any scarcity, as there is enough West to supply the demand until the new crop arrives. The first new Duluth wheat arrived here last year Sept. 14. This year the crop is much earlier, and we expect the arrival here before Sept. 1. Corn scarce and in good demand. No. 2 59c. and No. 3 57c. Sample lots offered at 54@56c. Oats in fair demand for car load on track. No. 2 white 38c; mixed Western 36½@37. Rye in demand for small lots, and good No. 2 sold at 71c.

JAMES S. MCGOWAN & SON.

BUFFALO MARKETS.

FLOUR—City ground clear Duluth spring $5.00@5.50; straight Duluth spring, $5.50@5.75; amber, $5.50@5.75; white winter, $5.25@5.50; new process, $6.50@6.75; Graham flour, $5.00@5.25. Western straight Minnesota bakers, $5.50@5.75; clear do, $5.00@5.50; white winter, $5.50@5.75; new process, $6.50@7.00; low grade flour, $2.50@4.00 CORNMEAL—Market steady, with a fair demand. Coarse, $1.15; fine, $1.25 per cwt. RYE FLOUR—In fair demand at $3.75@4.25. OATMEAL—Ingersoll, $5.75; Bannerman's granulated, $6.00; Schumacher's Akron, $6.25 per bbl. BUCKWHEAT FLOUR—Demand fair at $3.50 per cwt. WHEAT—Quiet. Sales 500 bu. No. 1 regular Northern Pacific at 95c, and six car loads No. 1 red winter, Buffalo inspection, at 93c. For No. 1 Northern Pacific at the Call Board, $1.01 asked cash, 90½c. bid to arrive, $1.00 asked 99½c. bid August, 98c. bid October, $1.00 asked year; for No. 1 regular do. 95½c. asked, 94c. bid. CORN—Dull. Sales three car-loads No. 2 at 60@60½, and one do. at 59c, all in store; at the Call Board No. 2 offered at 59½c cash, 59½c asked 58½ bid to arrive August and September. OATS—No. 2 white nominal at 41c. Mixed Western held at 38c. BARLEY—Season over; market nominal. RYE—Last sale of No. 2 Western was made at 72c.

FOREIGN EXCHANGE.

The market for sterling was fairly active and steady. The supply of commercial bills continues limited. The posted rates closed at 4.82½ for sixty days' and 4.84½ for demand. The actual rates ranged: At sixty days' sight, 4.81¾@4.82; demand, 4.83¾@4.84; cables, 4.84½@4.84¾, and commercial, 4.80½@4.81. Continental exchange dull; francs, 5.21⅞@5.21¼ and 2.19⅜@5.18¾; reichsmarks, 94⅛@94⅜ and 94⅝@94⅞; guilders, 39⅞ and 40⅛. The closing posted rates were:

	60 days.	30 days.
London	4 82½	4 84½
Paris francs	5 20	5 17½
Geneva	5 19⅜	5 16⅞
Berlin, reichsmarks	94¾	95⅜
Amsterdam, guilders	40⅛	40⅜

BUFFALO COMMERCE.

The receipts of flour at Buffalo, by lake, during the month of July, 1884, compared with the corresponding month last year, show an increase of 55,969 barrels, and in wheat an increase of 2,212,475 bushels; in corn there is a decrease of 2,213,376 bushels; in oats a decrease of 60,028 bushels, and in rye a decrease of 187,180 bushels. The total increase during the month, flour reduced to wheat is 31,936 bushels.

The following shows the receipts of flour and grain by lake during the month of July, in the years named:

	Flour, bbls.	Grain, bu.	Grain includ'g flour, bu.
1884	1,509,310	6,586,074	8,095,384
1883	245,893	6,833,983	8,063,448
1882	144,412	4,519,050	5,442,010
1881	100,574	9,341,751	9,843,621
1880	113,852	14,076,074	14,645,334
1879	150,404	7,909,401	8,661,421
1878	129,526	5,974,170	6,621,780
1877	93,922	6,984,427	7,454,037
1876	118,214	5,237,689	5,828,759
1875	148,051	8,858,652	9,597,247
1874	202,276	8,155,489	9,166,819
1873	160,282	10,419,637	11,221,037
1872	66,476	9,027,585	9,359,965
1871	161,563	7,521,457	8,829,072
1870	132,766	4,617,440	5,381,270
1869	137,668	5,050,476	5,738,816
1868	66,222	6,411,965	4,450,775

Up to the first of August this year, the receipts of flour show a decrease of 41,164 barrels, in grain of all kinds a decrease of 7,116,993 bushels, and in all grain, flour reduced to wheat, a decrease of 7,322,823 bushels.

The following shows the receipts by lake since the opening of navigation to and including July 31st in the years named:

	Flour, bbls.	Grain, bu.	Grain includ'g flour, bu.
1884	656,970	18,214,770	21,514,620
1883	701,134	25,331,763	28,837,443
1882	546,835	20,403,852	22,946,027
1881	386,559	27,779,339	29,209,264
1880	418,517	51,832,138	53,924,714
1879	335,564	22,195,016	23,872,836
1878	413,166	30,324,313	32,390,143
1877	267,011	18,108,834	19,443,989
1876	286,598	19,665,617	21,088,607
1875	418,239	20,686,257	22,775,452
1874	614,765	26,405,589	29,479,414
1873	491,679	27,011,312	29,470,707
1872	304,672	22,974,109	24,497,469
1871	639,220	23,641,880	26,837,981
1870	537,423	13,914,476	16,681,594
1869	612,632	16,244,184	19,309,840
1868	421,552	14,309,756	16,417,519

RAILROAD SHIPMENTS.

The following shows the shipments from elevators by rail, of grain received by lake for the month of July, and from the 1st of January in the years indicated:

	1884.	1883.	1882.	1881.
Wheat, bu.	280,082	179,153	453,816	567,740
Corn, bu.	1,188,867	1,209,657	615,312	3,904,229
Oats, bu.	.....	52,782	91,322	.....
Barley, bu.	.....	15,018	.....	4,200
Rye, bu.	500	500	.....	3,750
Total, bu.	1,469,449	1,457,110	1,160,450	4,479,919

FROM JANUARY 1ST TO JULY 31ST.

	1884.	1883.	1882.	1881.
Wheat, bu.	1,478,425	1,437,320	1,808,408	3,211,696
Corn, bu.	2,754,265	3,988,668	2,798,312	7,327,799
Oats, bu.	1,900	94,252	169,321	675,492
Barley, bu	34,374	77,346	91,589	27,441
Rye, bu.	500	1,000	8,690	3,750
Total, bu.	4,269,464	5,598,586	4,876,320	11,276,178

CANAL EXPORTS.

The following exhibit shows the amount of flour and grain shipped from Buffalo by canal from the opening of navigation to July 31st for for the last four years:

	1884.	1883.	1882.	1881.
Canal opened,	May 7.	May 7.	April 11.	May 17.
Flour bbls.	1,457	2,164	2,945	100
Wheat, bu.	7,151,147	5,644,944	4,635,498	6,855,205
Corn, bu.	3,357,060	8,996,396	6,117,622	7,259,830
Oats, bu.	1,697,655	1,843,271	234,877	132,250
Barley, bu.	97,654	131,173	184,818	193,142
Rye, bu.	806,926	1,032,678	302,177	.....
Total, bu.	13,110,442	17,648,462	11,474,992	14,440,427

NO. OF BOATS CLEARED SINCE OPENING.

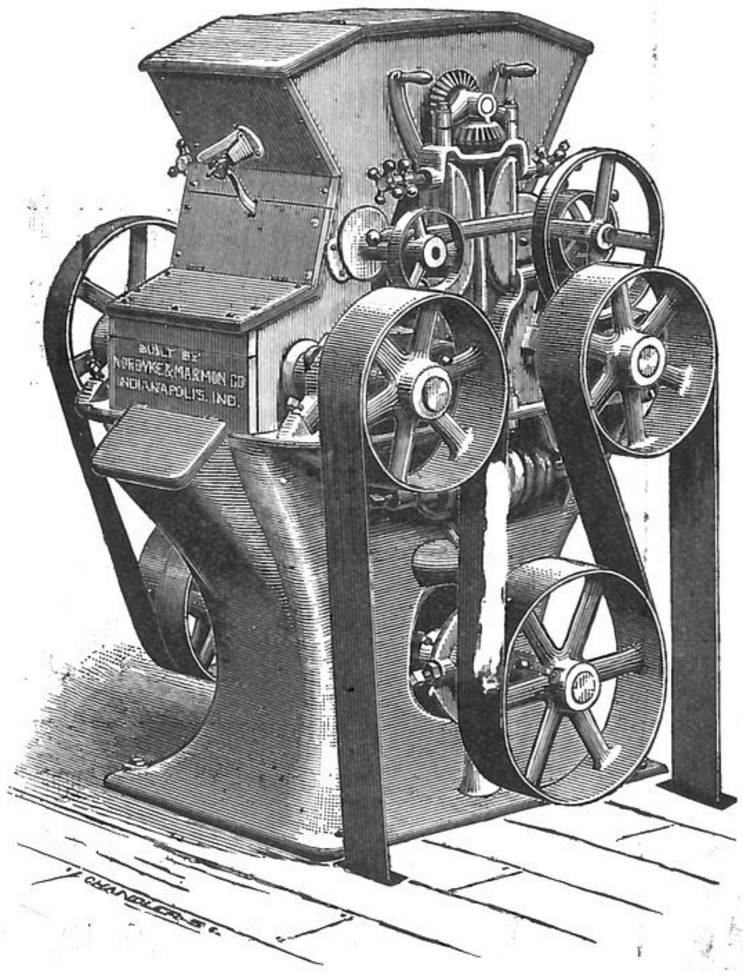
1884	2,290	1878	3,703
1883	3,776	1877	2,316
1882	2,802	1876	2,130
1881	2,811	1875	2,348
1880	4,957	1874	3,652
1879	2,800	1873	....

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Builders from the Raw Material of

ROLLER MILLS, CENTRIFUGAL REELS, FLOUR BOLTS.

WE ARE THE SOLE OWNERS FOR THE UNITED STATES OF ALL THE PATENTS UPON THIS ROLLER MILL.



This Is the Only Roller Mill Made Having All the Essentials Needed In Successful Milling.

500 BARREL MILL IN MISSOURI.

Read what an Old Miller who has Thirty-Four Pairs of these Rolls in Constant Use, Says:

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND. OFFICE OF DAVIS & FAUCETT MILLING CO., ST. JOSEPHS, MO., Nov. 28th, 1883.

Gentlemen: In regard to the workings of our new mill erected by you, will say it is working fully up to and beyond our expectations. Our average work is fully 33 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors, "You may *try* to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,

Yours, etc., R. H. FAUCETT, PRES.

500 BARREL MILL IN ILLINOIS.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND. OFFICE OF DAVID SUPPIGER & CO., HIGHLAND, ILL., Jan. 10, 1884.

Gents: We started up our mill in June last year, and it gives us pleasure to say that your Roller Mills are doing splendid work and give us no trouble. Your milling program required no changes, and concerning yields, we get all the flour from the offals, and we sell our best grades in the principal markets of the United States at the highest prices offered for any flour. All the machinery made by you is first-class, and we would not know where to purchase as good.

Yours respectfully, DAVID SUPPIGER & CO.

125 BARREL MILL IN INDIANA.

NORDYKE & MARMON CO., INDIANAPOLIS, IND. LAPEL, MADISON COUNTY, IND., Jan. 10, 1884.

Gentlemen: The 125 barrel All-Roller mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading mill-furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantees. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you.

Yours truly, J. T. FORD.

☞ Letters on file in our office from a large number of small roller millers giving as favorable reports as above. A portion will be published as occasion demands. ☜

SPECIAL MILLING DEPARTMENT!

Mill Builders & Contractors--Guarantee Results

Motive Power and Entire Equipment of a Modern Mill Furnished under one Contract.

—THE—

IMPROVED HUGHES DUSTER

HAS BEEN ADOPTED AND IS

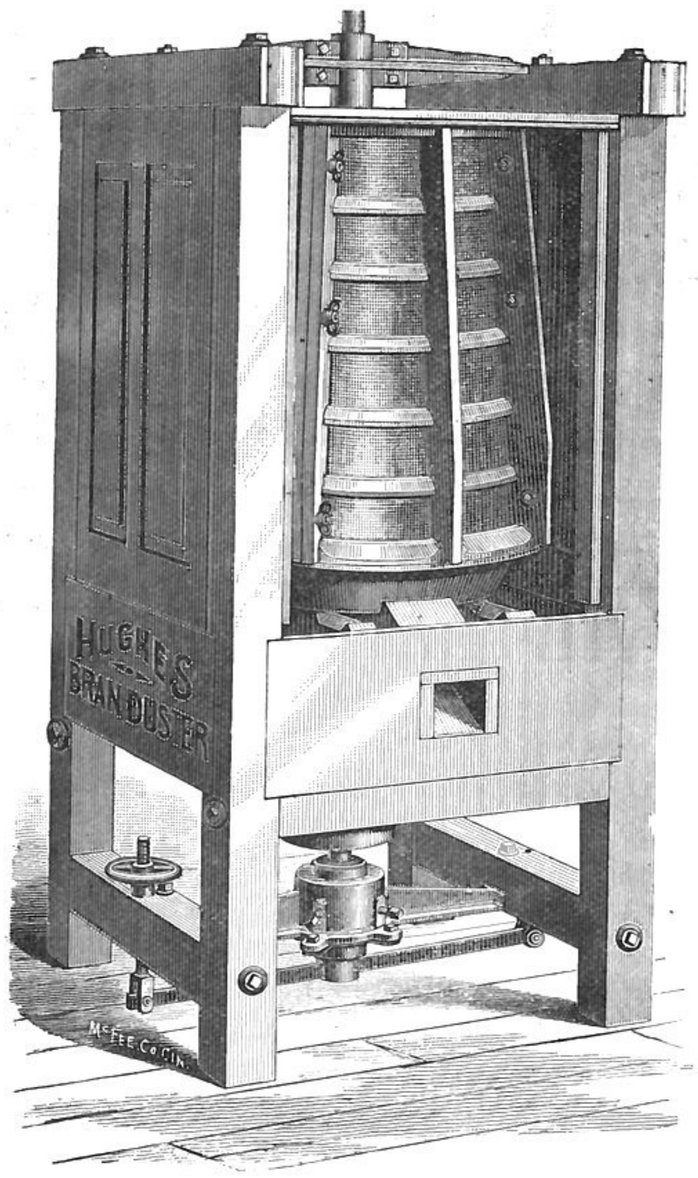
In Use in the Largest and Most Prominent Mills

in the country. It has been adopted only after protracted tests, and because it has fully and completely met every representation we have ever made for it. J. A. Christian & Co., of Minneapolis, say:

"We find its Capacity is Greater and Work more Thorough than any other machine we have tried."

Starr & Co., the great millers of South Vallejo, Cal., are using five of our machines, and say:

"They are unquestionably the Best Bran Dusters in the market, both in dusting capacity and construction."



The ***IMPROVED HUGHES DUSTERS*** are used on SHORTS, CRUSHED TAILINGS, FINISHED MIDDLINGS, etc., and the peculiar construction of our cylinder makes it the

ONLY MACHINE THAT CAN HANDLE HEAVY OFFAL SUCCESSFULLY.

By using them for dusting the offal between the last two reductions, the product of low grade flour has been lessened from three to five per cent. We fully guarantee every machine we build to be ***just as we represent it, and to do just what we say it will.*** In buying of us you assume no risk, as we ask no pay until the machine has ***fully demonstrated its capabilities.*** Write for further information concerning machines, prices, terms, etc., etc., to

THE STEPHEN HUGHES MFG. CO., HAMILTON, OHIO.